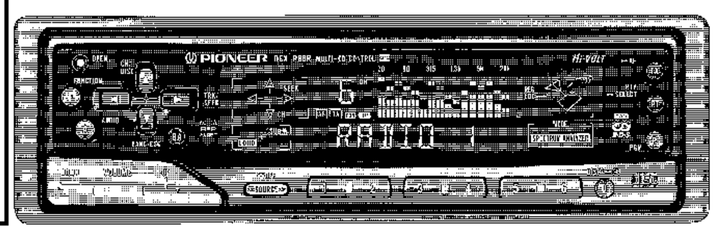
Service Manual

PIONEER®
The Art of Entertainment



ORDER NO.
CRT2045

MULTI-CD/DSP CONTROL CD PLAYER WITH RDS TUNER

DEX-P88R EW

COMPACT disc DIGITAL AUDIO

- **See the separate manual CX-597(CRT1829) for the CD mechanism description, disassembly and circuit description.**
- **The CD mechanism employed in this model is one of CX-597 series.**
- **This device employs an inverter as the power supply for EL. The inverter has an output voltage reach approximately 200 volts(AC). Utmost care should be used not to suffer from a possible electric shock, accordingly.**

CONTENTS

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K-ZED. JUNE 1997 Printed in Belgium

● CD Player Service Precautions

1. For pickup unit(CXX1230) handling, please refer to"Disassembly"(CX-597 Service Manual CRT1829). During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).
2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
3. Please checking the grating after changing the service pickup unit(see page 56).
4. This device employs an inverter as the power supply for the EL. Utmost cars should be used not to suffer from a possible electric shock, accordingly.

1. SAFETY INFORMATION

1. Safety Precautions for those who Service this Unit.

- **When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.**

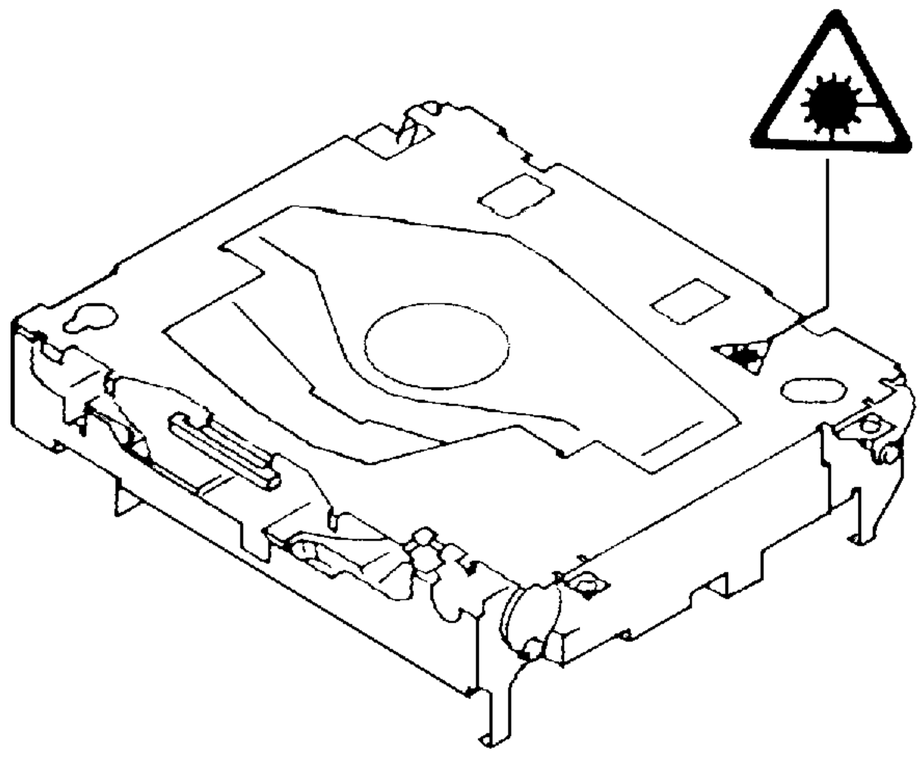
Caution:

1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the rear of the player.

CLASS 1
LASER PRODUCT

3. The triangular label is attached to the mechanism unit frame.



4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.
Wavelength = 800 nanometers

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

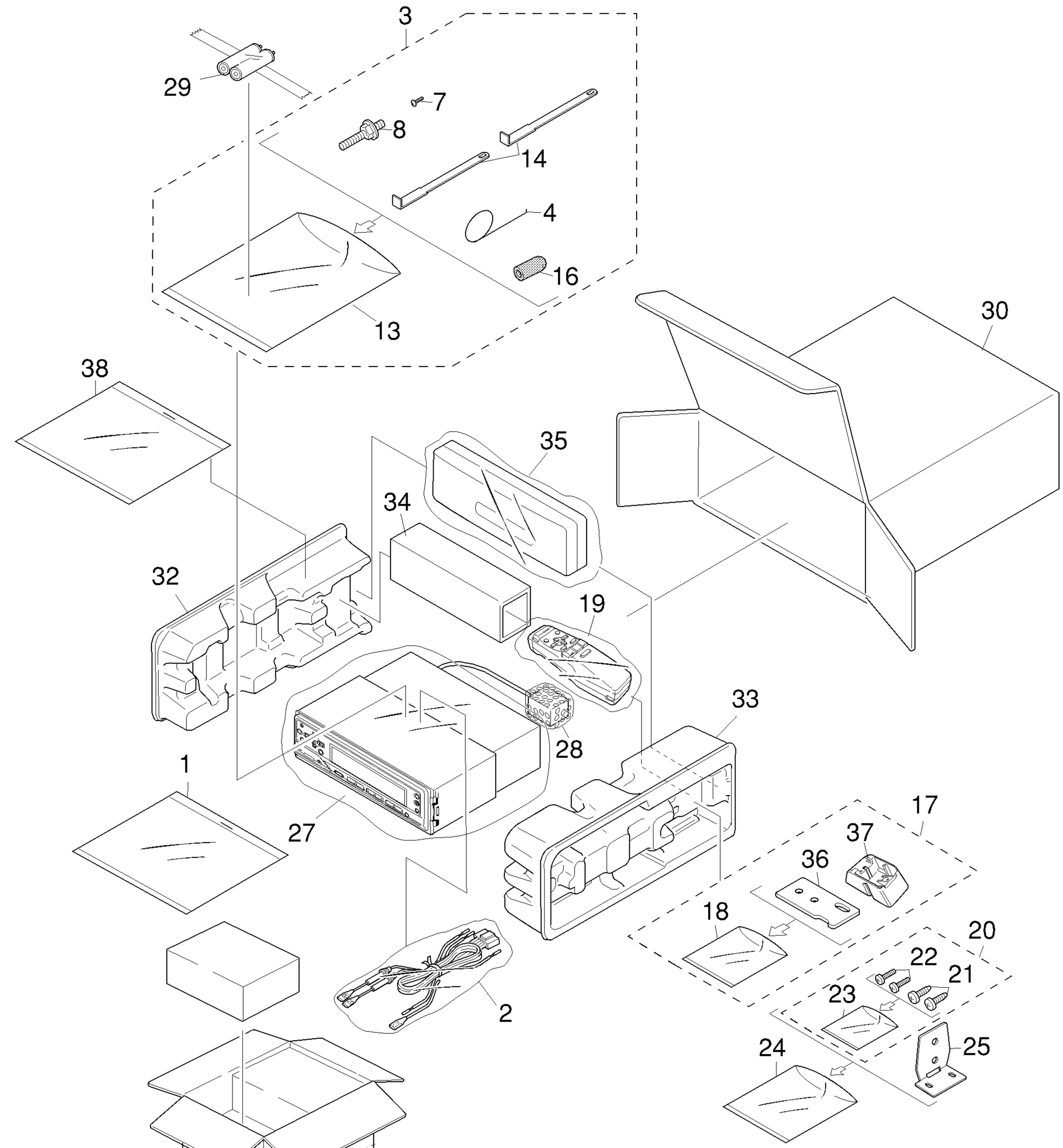


Fig. 1

NOTE:

● Parts marked by " * "are generally unavailable because they are not in our Master Spare Parts List.

● Screws adjacent to ▼ mark on the product are used for disassembly.

(1)PARTS LIST

Mark	No.	Description	Part No.
	1-1	Owner's Manual	CRD2350
	1-2	Owner's Manual	CRD2351
	1-3	Installation Manual	CRD2356
	1-4	Installation Manual	CRD2474
	1-5	Installation Manual	CRD2475
*	1-6	Caution Card	CRP1145
*	1-7	Label	CRW1343
	1-8	Passport	CRY1013
*	1-9	Wrranty Cordt	CRY1087
	1-10	Polyethylene Bag	CEG1116
	2	Cord	CDE5251
	3	Accessory Assy	CEA2065
	4	Spring	CBH-865
	5,6	•••••	
	7	Screw	CBA1120
	8	Screw	CBA1284
	9-12	•••••	
*	13	Polyethylene Bag	E36-615
	14	Handle	CNC5395
	15	•••••	
	16	Bush	CNV1009
	17	Base Assy	CEA2344
	18	Polyethylene Bag	CZE3188
	19	Remote Control Assy	CXB1164
	20	Screw Assy	CZE3198
	21	Screw	BNC40P120FZK
	22	Screw	BPZ30P100FZK
*	23	Polyethylene Bag	CEG-127
*	24	Polyethylene Bag	CZE3201
	25	Bracket	CZN6467
	27	Polyethylene Bag	CEG-162
	28	Air Cushioned Bag	CEG1192
	29	Battery	CEX1006
	30	Carton	CHG3309
	31	Contain Box	CHL3309
	32	Protector	CHP1766
	33	Protector	CHP1767
	34	Spacer	CHW1433
	35	Case Assy	CXA7194
*	36	Sheet	CZA3371
*	37	Base	CZN6466
	38-1	Owner's Manual	CRD2352
	38-2	Polyethylene Bag	CEG1116

● Owner's Manual, Installation Manual

Model	Part No.	Language
DEX-P88R/EW	CRD2350	English, Spanish
	CRD2351	French, German
	CRD2352	Italian, Dutch
	CRD2356	English, Spanish
	CRD2474	French, German
	CRD2475	Italian, Dutch

2.2 EXTERIOR

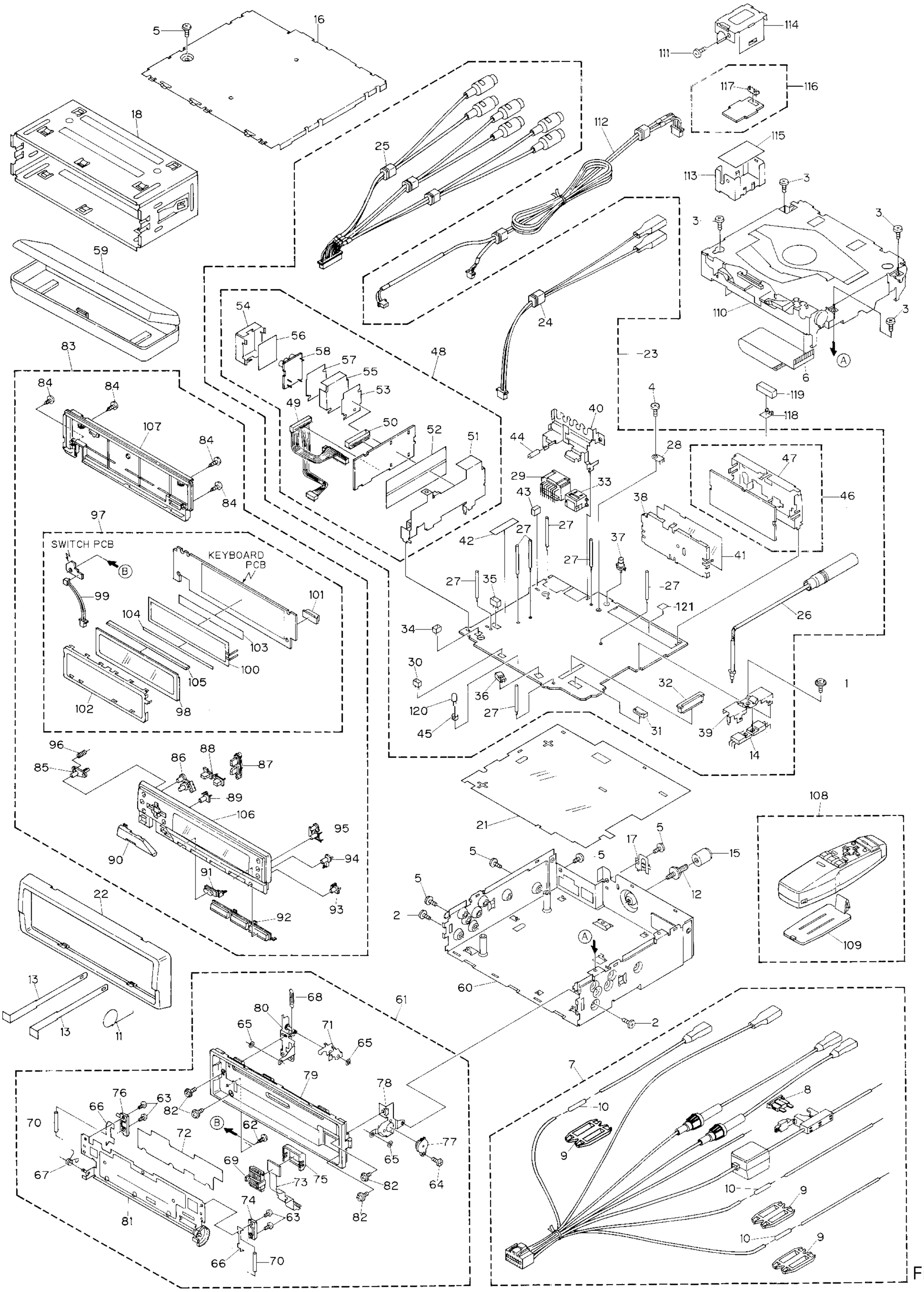


Fig. 2

● EXTERIOR

(1)PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	ASZ26P080FMC
	2	Screw	BMZ30P040FMC
	3	Screw	BSZ26P050FMC
	4	Screw	BSZ30P055FUC
	5	Screw	BSZ30P060FMC
	6	Connector	CDE4864
	7	Cord	CDE5251
	8	Fuse(3A)	CEK1134
	9	Cap	CNS1472
	10	Resistor	RS1/2PMF102J
	11	Spring	CBH-865
	12	Screw	CBA1284
	13	Handle	CNC5395
	14	Transistor(Q941,992)	2SD2396
	15	Bush	CNV1009
	16	Case	CNB2140
	17	Holder	CNC4963
	18	Holder	CNC6798
	19	•••••	
	20	•••••	
	21	Insulator	CNM5143
	22	Panel	CNS4553
	23	Tuner Amp Unit	CWM5146
	24	Cord	CDE5372
	25	Cord	CDE5387
	26	Antenna Cable	CDH1146
	27	Clamper	CEF1006
	28	Terminal(CN404)	CKF1059
	29	Plug(CN901)	CKM1187
	30	Plug(CN802)	CKS-783
	31	Connector(CN801)	CKS2212
	32	Connector(CN991)	CKS2774
	33	Connector(CN101)	CKS3408
	34	Connector(CN804)	CKS3582
	35	Connector(CN651)	CKS3583
	36	Connector(CN803)	CKS3596
	37	Mini Pinjack(CN403)	CKX1046
	38	Holder	CNC6356
	39	Holder	CNC6431
	40	Bracket	CNC6952
	41	Insulator	CNM4684
	42	Insulator	CNM4815
	43	Spacer	CNM4868
	44	Spacer	CNM5306
	45	Holder	CNV1906

Mark	No.	Description	Part No.
	46	FM/AM Tuner Unit	CWE1416
	47	Holder	CNC6554
	48	High Output Unit	CWX2135
	49	Cord	CDE5373
	50	Plug(CN4052)	CKS1059
	51	Holder	CNC6951
	52	Insulator	CNM4573
	53	Insulator	CNM4760
	54	Shield	CNC6224
	55	Shield	CNC6274
	56	Insulator	CNM4610
	57	Insulator	CNM4814
	58	DC/DC Converter Unit	CWM4538
	59	Case Assy	CXA7194
	60	Chassis Unit	CXB1373
	61	Panel Assy	CXA9953
	62	Screw	BPZ20P060FMC
	63	Screw	CBA1082
	64	Screw	CBA1176
	65	Washer	CBF1001
	66	Spring	CBH1528
	67	Spring	CBH1660
	68	Spring	CBH1696
	69	Connector	CKS2780
	70	Roller	CLA3247
	71	Arm	CNC7130
	72	Sheet	CNM5142
	73	P.C.Board	CNP3847
	74	Holder	CNV2141
	75	Cover	CNV3965
	76	Holder	CNV4979
	77	Damper Unit	CXA7159
	78	Holder Unit	CXA7794
	79	Panel Unit	CXB1372
	80	Holder Unit	CXA9806
	81	Holder Unit	CXA9807
	82	Screw	IMS20P040FZK
	83	Detach Grille Assy	CXA9966
	84	Screw	BPZ20P080FZK
	85	Button(○)	CAC4971
	86	Button(F A)	CAC4972
	87	Button(▲,▼)	CAC5203
	88	Button(◄,►)	CAC5204
	89	Button(B A)	CAC4975
	90	Button(- +)	CAC5380

Mark	No.	Description	Part No.
	91	Button(SOURCE)	CAC5207
	92	Button(1-6)	CAC5381
	93	Button(D)	CAC4979
	94	Button	CAC4980
	95	Button	CAC4981
	96	Spring	CBH1844
	97	Keyboard Unit	CWM5062
	98	LCD	CAW1403
	99	Cord	CDE4387
	100	EL	CEL1493
	101	Connector(CN1901)	CKS2733
	102	Holder	CNC6920
	103	Double Side Seal	CNM5301
	104	Spacer	CNM5449
	105	Connector	CNV4817

Mark	No.	Description	Part No.
	106	Grille Unit	CXA9794
	107	Cover Unit	CXA9828
	108	Remote Control Assy	CXB1164
	109	Battery Cover	CNS4407
	110	CD Mechanism Module	CXK5002
	111	Screw	BSZ26P050FMC
	112	Cord	MDE9009
	113	Holder	MNC9001
	114	Holder	MNC9002
	115	Insulator	MNM9001
	116	Inverter Unit	MWM9001
	117	Plug(CN101)	CKS1224
	118	Holder	CNC6469
	119	Cushion	CNM4870
	120	Lamp	CEL1263
	121	Spacer	CNM5562

2.3 CD MECHANISM MODULE

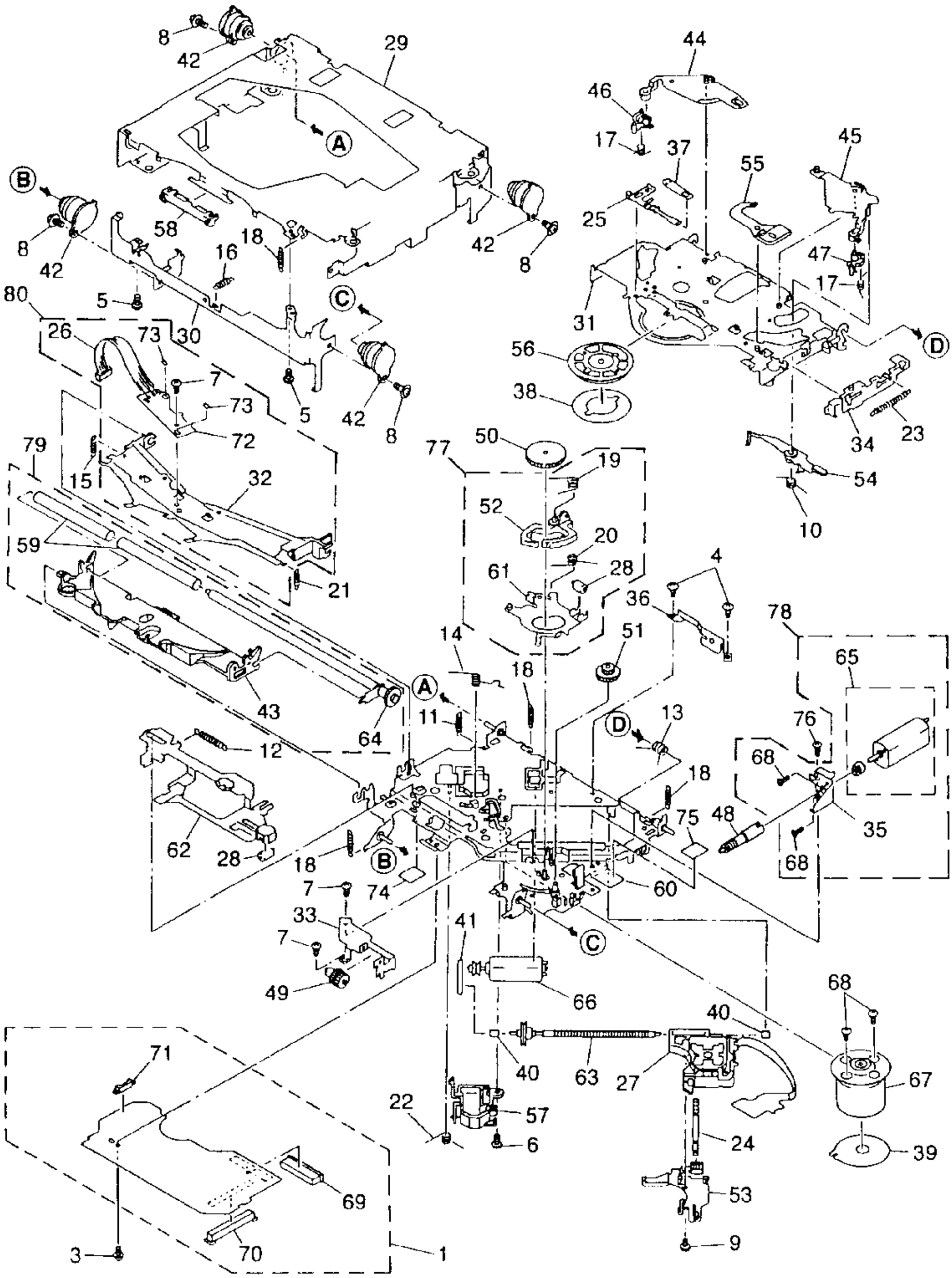


Fig. 3

● CD MECHANISM MODULE

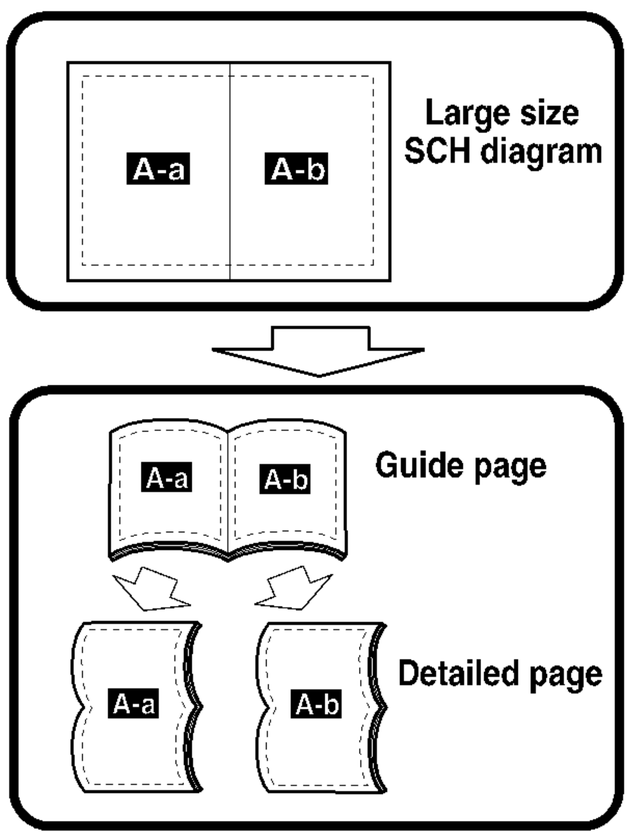
● PARTS LIST

Mark	No.	Description	Part No.
	1	Control Unit	CWX2121
	2	•••••	
	3	Screw	IMS26P035FMC
	4	Screw	BMZ20P040FMC
	5	Screw	BSZ20P040FMC
	6	Screw(M2×3)	CBA1077
	7	Screw(M2×2)	CBA1250
	8	Screw(M2×5)	CBA1296
	9	Screw(M2×3.85)	CBA1362
	10	Spring	CBH1945
	11	Spring	CBH1724
	12	Spring	CBH1939
	13	Spring	CBH1729
	14	Spring	CBH1730
	15	Spring	CBH1731
	16	Spring	CBH1732
	17	Spring	CBH1736
	18	Spring	CBH1745
	19	Spring	CBH1832
	20	Spring	CBH1833
	21	Spring	CBH1848
	22	Spring	CBH1849
	23	Spring	CBH1863
	24	Spring	CBL1214
	25	Spring	CBL1269
	26	Connector(CN1)	CDE4576
	27	Pickup Unit(Service)	CXX1230
	28	Roller	CLA2627
	29	Frame	CNC5796
	30	Frame	CNC5797
	31	Arm	CNC5799
	32	Arm	CNC5801
	33	Bracket	CNC5871
	34	Lever	CNC6054
	35	Bracket	CNC6056
*	36	Bracket	CNC6376
	37	Spacer	CNM3315
	38	Sheet	CNM4849
	39	PCB	CNP4230
	40	Bearing	CNR1415
	41	Belt	CNT1071
	42	Damper	CNV3974
	43	Arm	CNV4120
	44	Arm	CNV4122
	45	Arm	CNV4123
	46	Arm	CNV4124
	47	Arm	CNV4125
	48	Gear	CNV4128
	49	Gear	CNV4129
	50	Gear	CNV4130
	51	Gear	CNV4131
	52	Arm	CNV4136
	53	Holder	CNV4663
	54	Arm	CNV4138
	55	Arm	CNV4139
	56	Clamper	CNV4140
	57	Holder	CNV4664
	58	Guide	CNV4484
	59	Roller	CNV4509
	60	Chassis Unit	CXA9515
	61	Arm Unit	CXA8565
	62	Lever Unit	CXA9300
	63	Screw Unit	CXA8699
	64	Gear Unit	CXA8701
	65	Load Motor Unit(M3)	CXA8702
	66	CRG Motor Unit(M2)	CXA8986
	67	Motor Unit(M1)	CXA8912
	68	Screw	JFZ20P025FMC
	69	Connector(CN101)	CKS1953
	70	Connector(CN701)	CKS2774
	71	Connector(CN801)	CKS2196
*	72	Gathering PCB	CNX2445
	73	Photo-transistor(Q1, 2)	CPT-230S-X
	74	Sheet	CNM4873
	75	Cushion	CNM3917
	76	Screw	BMZ20P025FMC
	77	ELBO Arm Assy	CXA8889
	78	Load Motor Assy	CXA8891
	79	LO Arm Assy	CXA8892
	80	Guide Arm Assy	CXA8893

3. SCHEMATIC DIAGRAM

3.1 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



A-a

A TUNER AMP UNIT

IP-BUS IN
IP-BUS(0dB):+2.2dBs

IP-BUS ISOLATOR
IC101 TA2050S

VD REGULATOR

E CONTROL UNIT

IP-BUS DRIVER
IC102 CA0008AM

S-CD(760mV):-0.2dBs

SYS+B

14.4V

COMPAR

B FM/AM TUNER UNIT

FM(100%):-21.2dBs
AM(30%):-27.2dBs

IC401
TUNER PLL
PM2005B

7.200MHz

ANT

RDS DECODER
PMW001B

4.332MHz

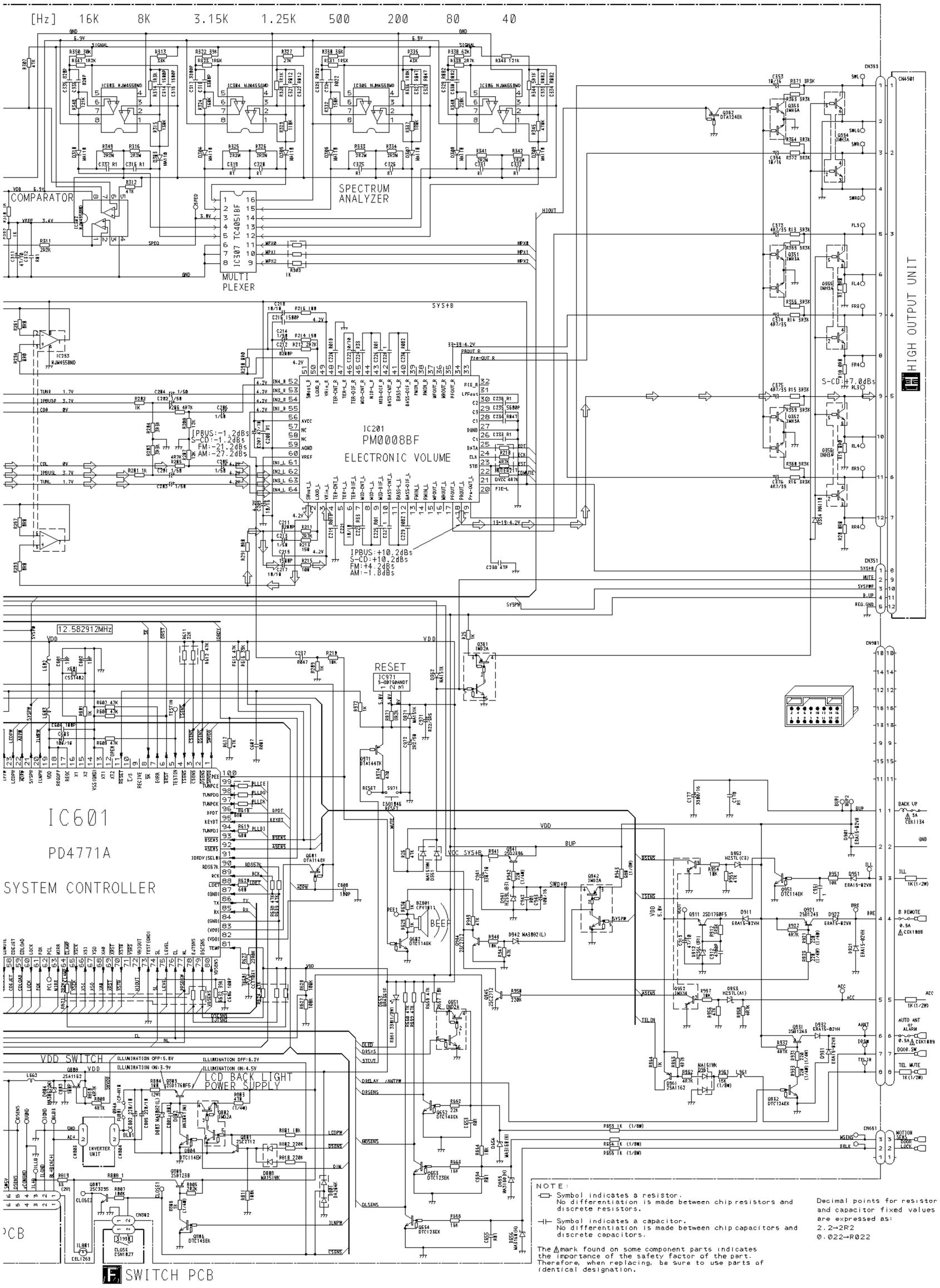
SYSTE

KEYBOARD UNIT
Consists of
KEYBOARD PCB
SWITCH PCB

C KEYBOARD PCB

A

A-b



NOTE:

- ⊏⊐ Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- ⊣⊢ Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

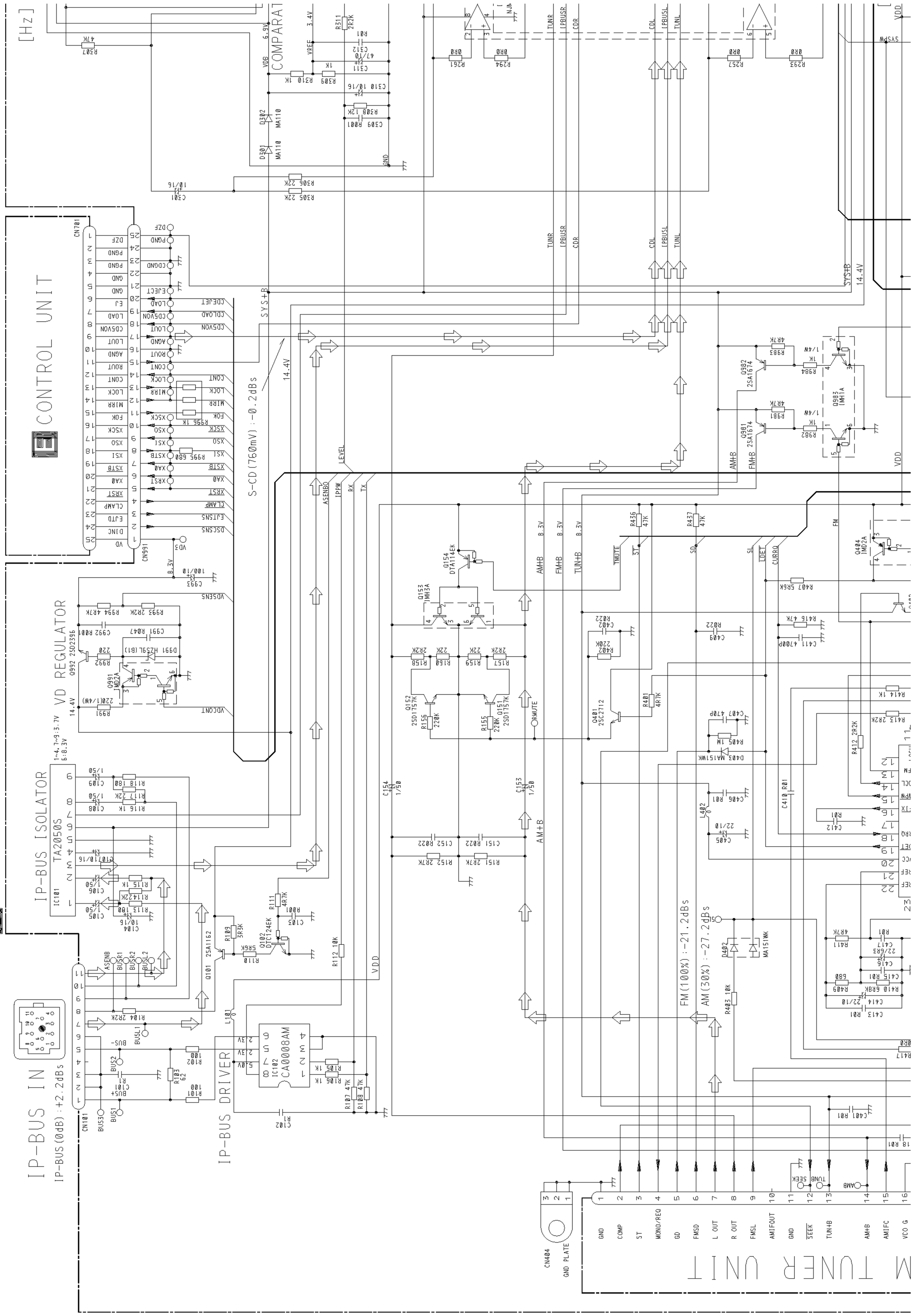
Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
0.022→R022

Fig. 4

A F

A-b

A-a



A-a

A-a A-b

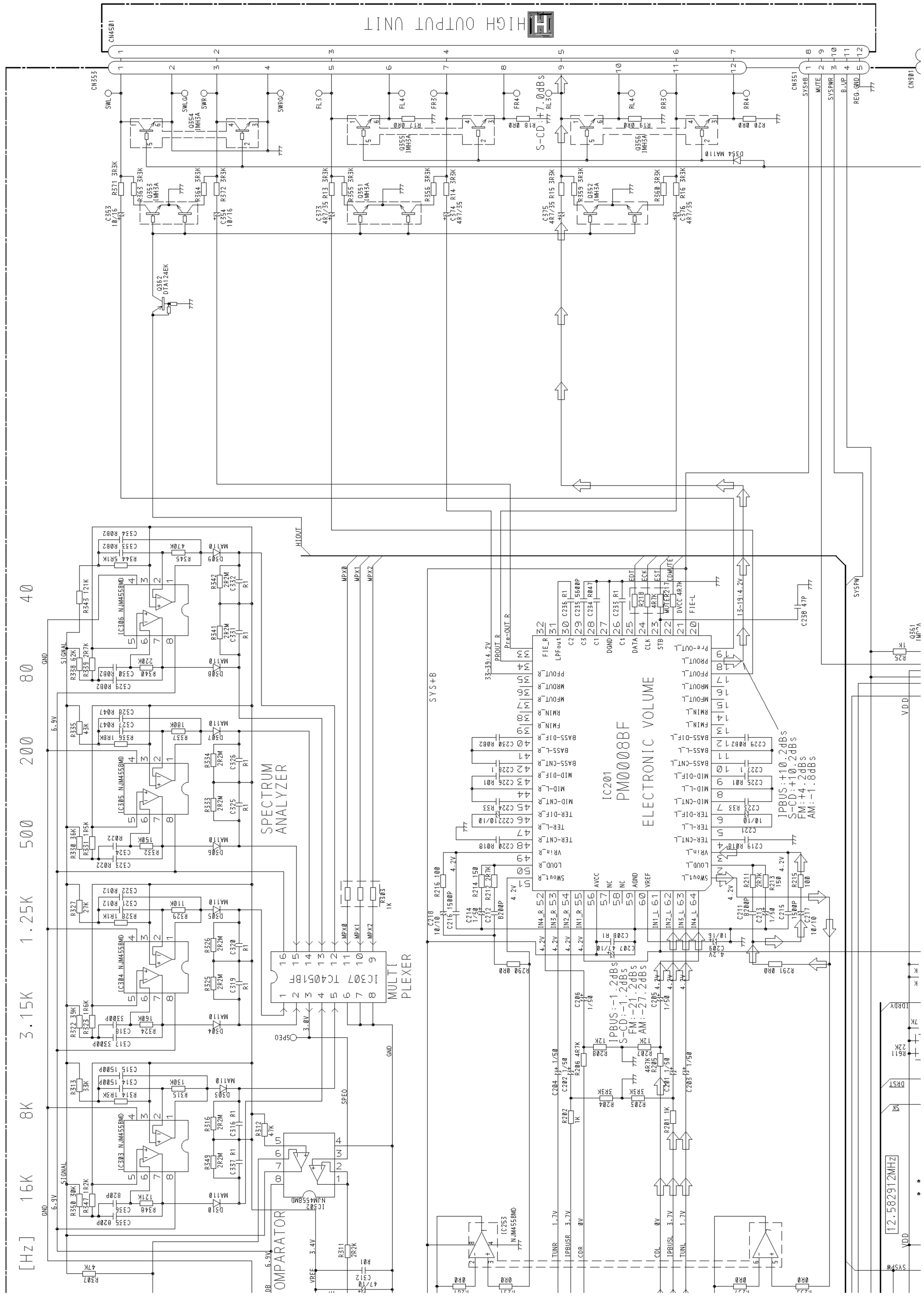
KEYBOARD PCB

KEYBOARD UNIT
Consists of
KEYBOARD PCB
SWITCH PCB

Fig. 5

A-b

A-a



A-a A-b

NOTE:
- ⊣⊢ Symbol indicates a resistor.
  No differentiation is made between chip resistors and discrete resistors.
- ⊣⊢ Symbol indicates a capacitor.
  No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Decimal points for resistor and capacitor fixed values are expressed as:
2.2→2R2
Ø.Ø22→RØ22

IC601 PD4771A SYSTEM CONTROLLER

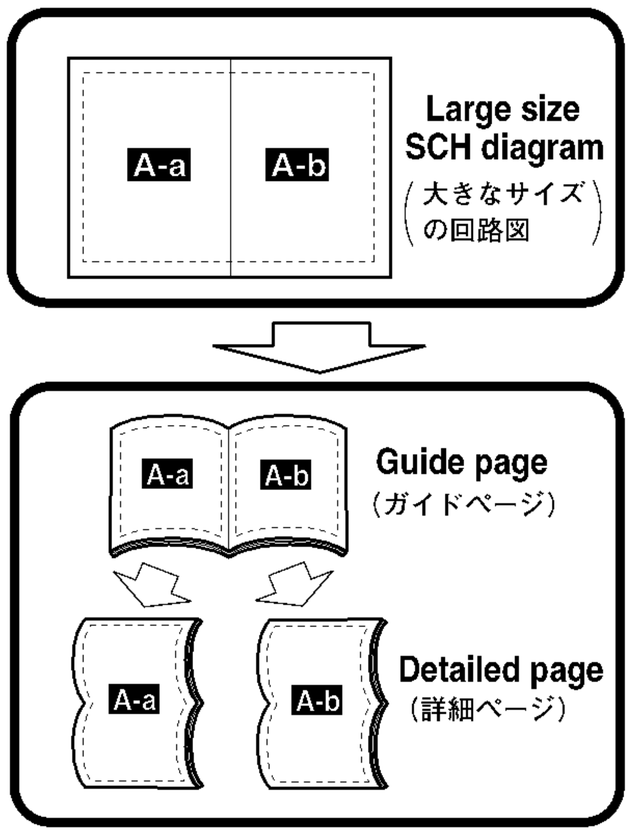
LCD BACK LIGHT POWER SUPPLY

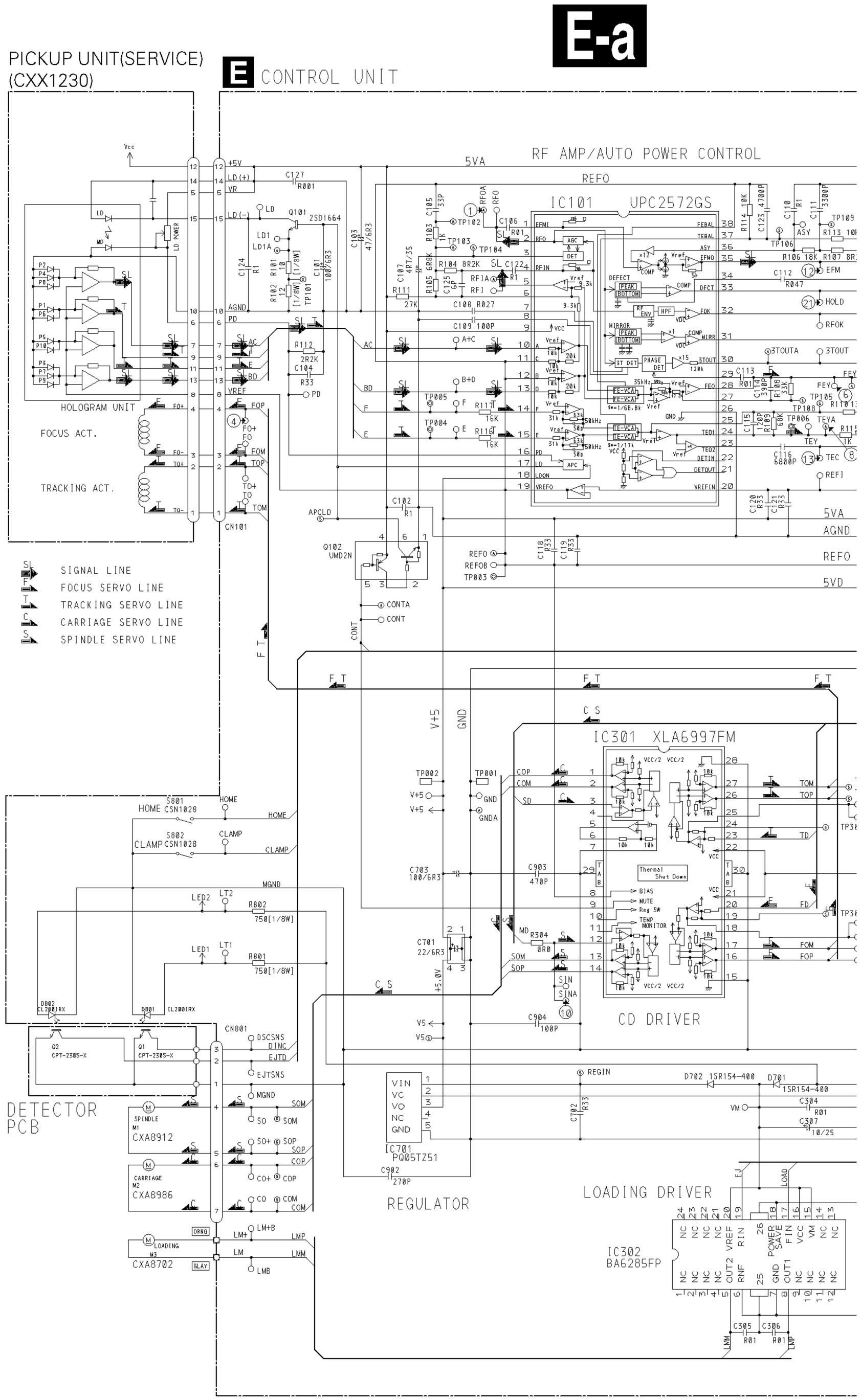
VDD SWITCH

SWITCH PCB

Fig. 6

3.2 CD MECHANISM MODULE(GUIDE PAGE)





E-b

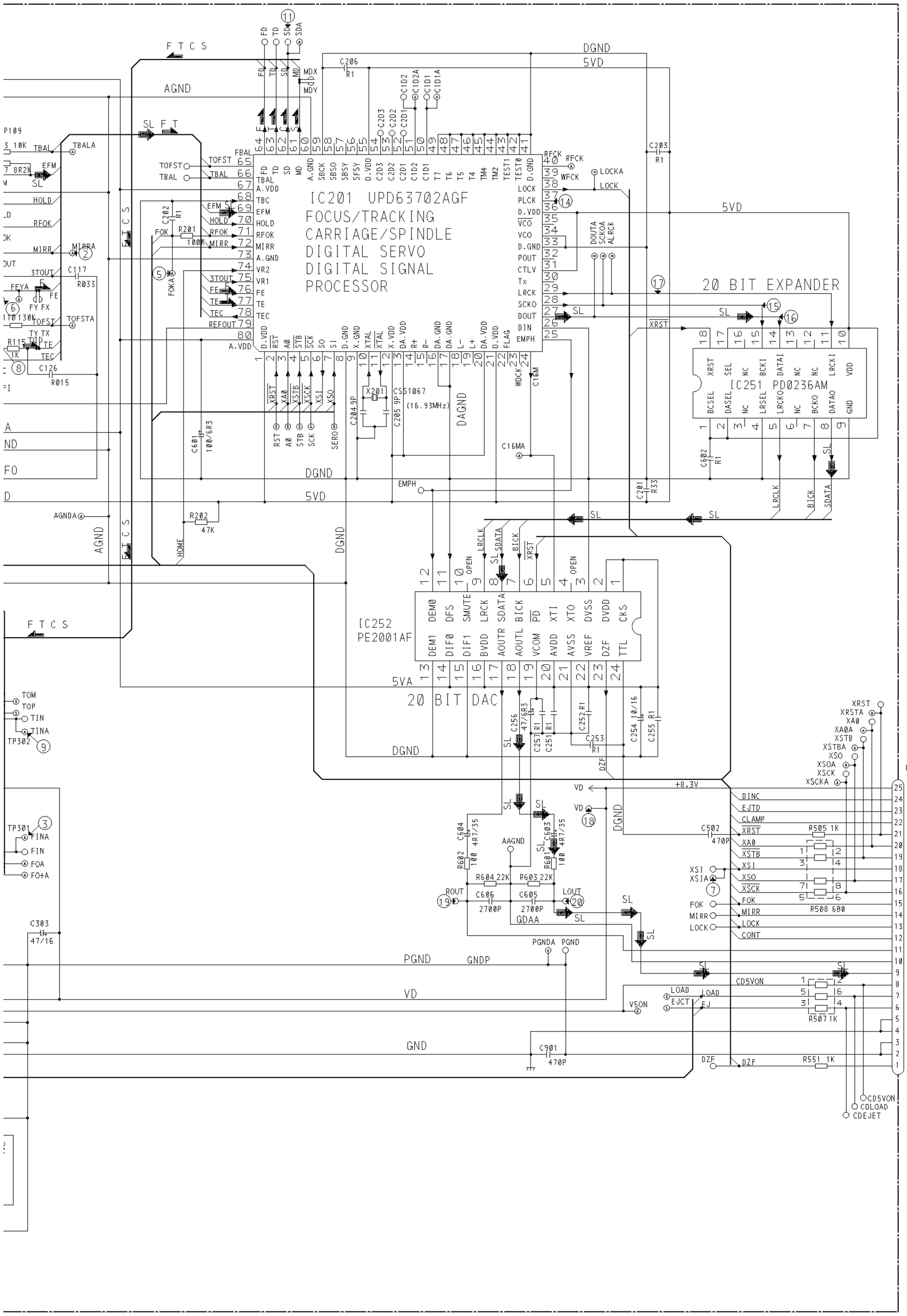


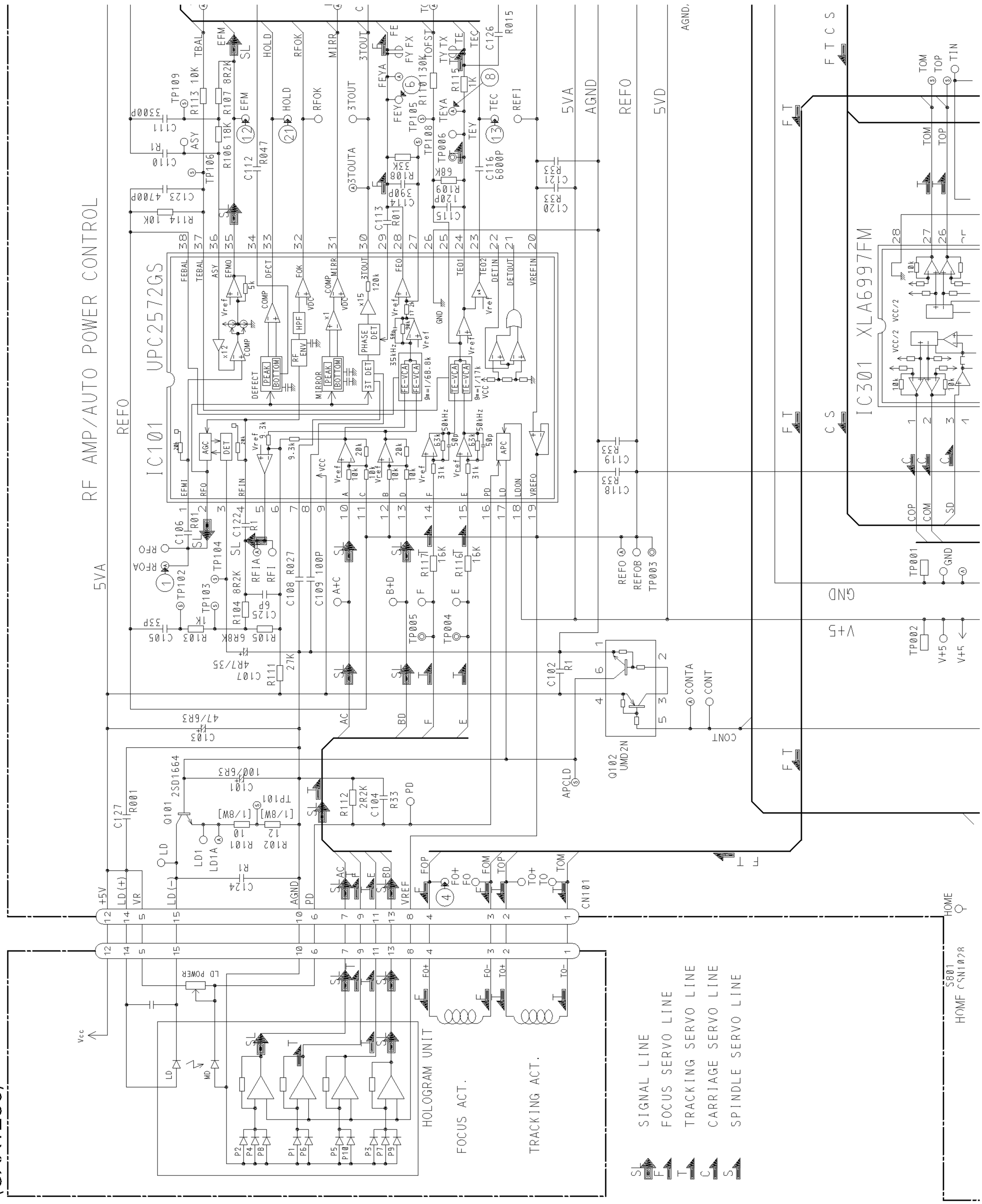
Fig. 7

E-a E-b

RF AMP/AUTO POWER CONTROL

CONTROL UNIT

PICKUP UNIT(SERVICE)
(CXX1230)



E-b
E-a

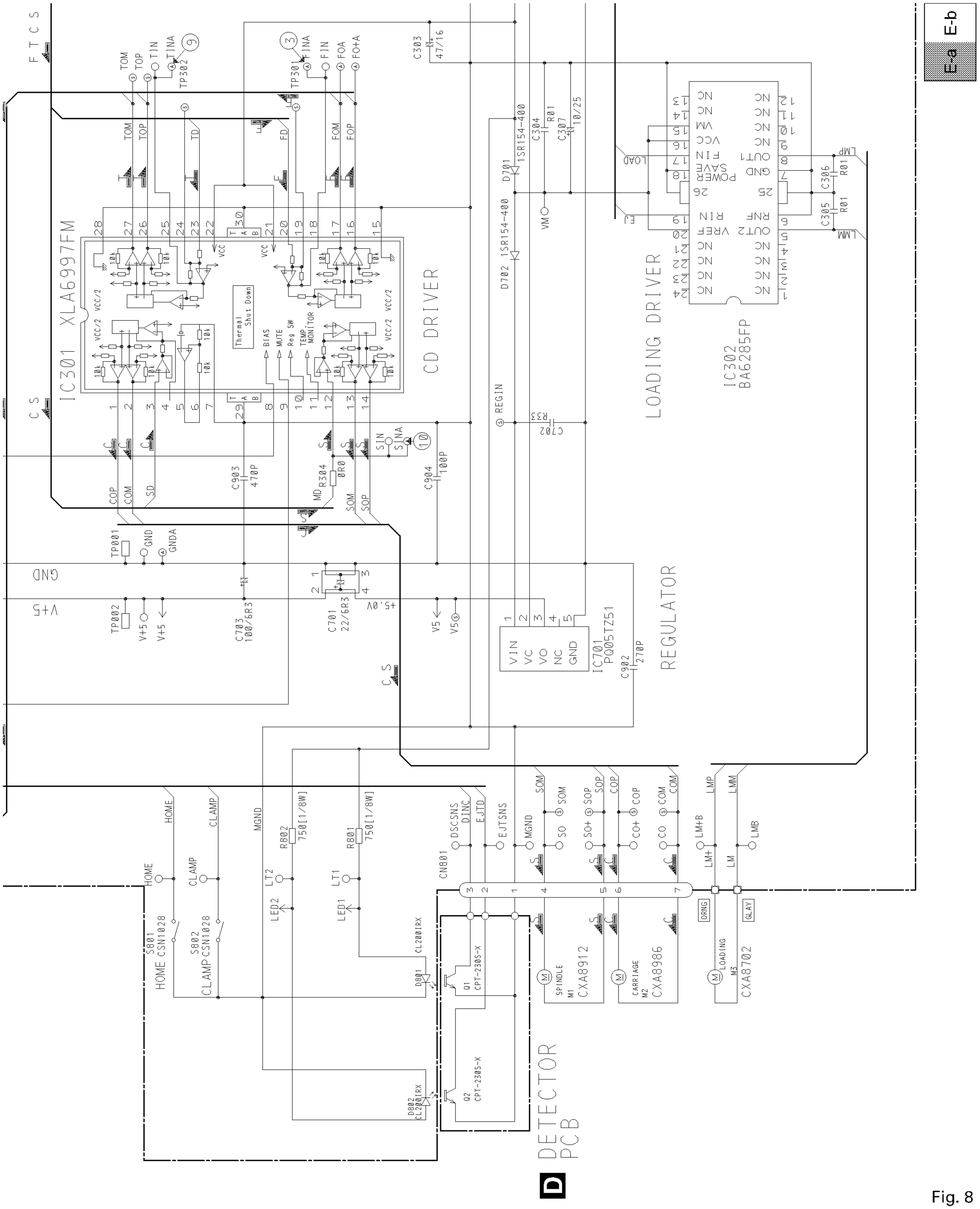
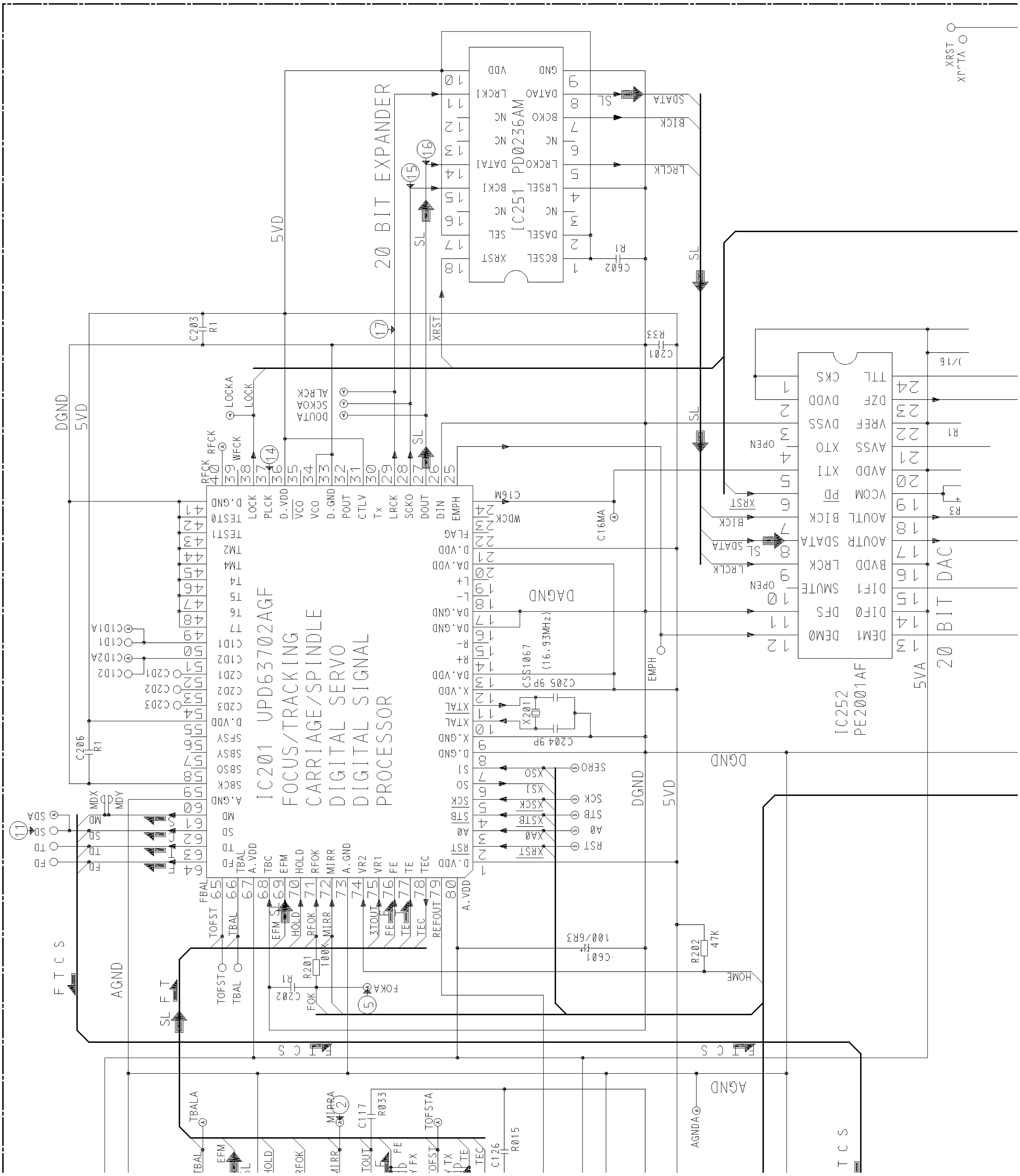


Fig. 8


IC201 UPD63702AGF
FOCUS/TRACKING
CARRIAGE/SPINDLE
DIGITAL SERVO
DIGITAL SIGNAL
PROCESSOR
IC251 PD0236AM
20 BIT EXPANDER
IC252 PE2001AF
20 BIT DAC
X201 CSS1067 (16.93MHz)
C205 9P
C204 9P
C203 R1
C206 R1
C202 R1
C201 R33
C602 R1
C601 100/6R3
R201 100K
R202 47K
C117 R033
C126 R015
5VD
DGND
AGND
DAGND
5VA
SL
F T C S
XRST
SDATA
BICK
LRCLK
EMPH
HOME
FOKA
LOCKA
ALRCK
SCKOA
DOUTA
C16MA
TOFST
TBAL
TBALA
MIRRA
TOFSTA
AGNDA
OPEN

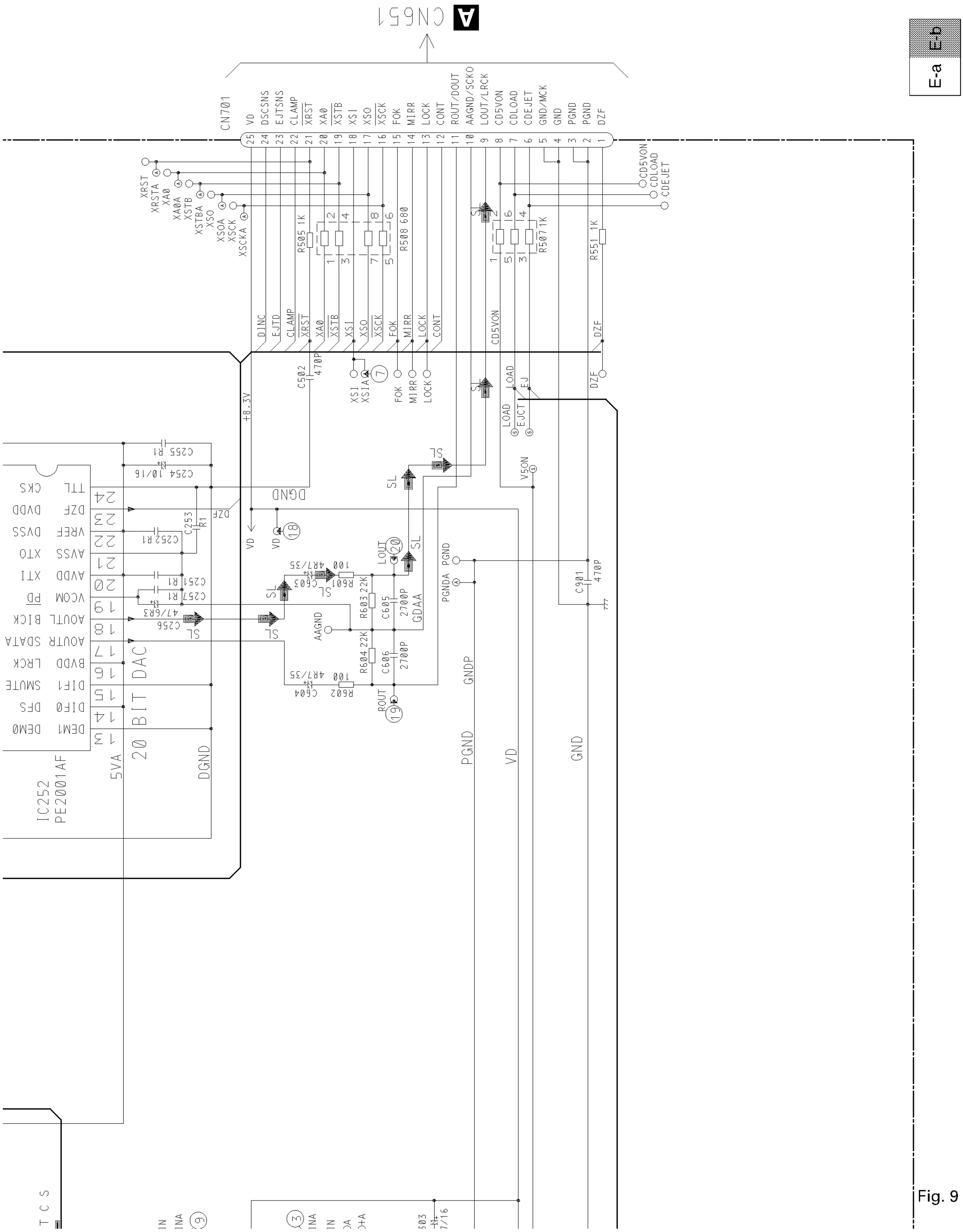
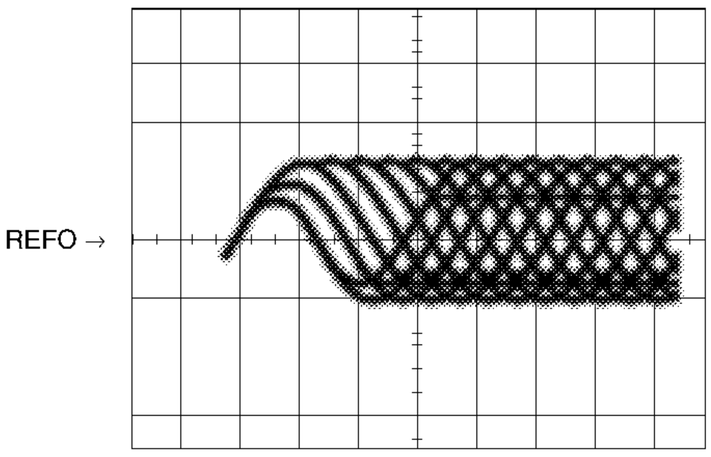

A CN651
CN701
VD DSCSNS EJTSNS CLAMP XRST XA0 XSTB XSI XSO XSCK FOK MIRR LOCK CONT ROUT/DOUT AAGND/SCKO LOUT/LRCK CD5VON CDLOAD CDEJET GND/MCK GND PGND PGND DZF
XRST XRSTA XA0 XA0A XSTB XSTBA XSO XSOA XSCK XSCKA
R505 1K
R508 680
R507 1K
R551 1K
CD5VON CDLOAD CDEJET
DINC EJTD CLAMP XRST XA0 XSTB XSI XSO XSCK FOK MIRR LOCK CONT CD5VON DZF
C502 470P
XSI XSIA (7)
FOK MIRR LOCK
LOAD EJCT LOAD EJ DZF
+8.3V
C255 R1
C254 10/16
C253 R1
C252 R1
C251 R1
C257 R1
C256 47/6R3
DZF
DGND
VD VD (18)
SL
V5ON
LOUT (20)
R601 100 4R7/35
C603
R603 22K
C605 2700P
AAGND
GDAA
PGNDA PGND
C901 470P
R604 22K
C606 2700P
R602 100 4R7/35
C604
ROUT (19)
IC252 PE2001AF
TTL CKS DZF DVDD VREF DVSS AVSS XTO AVDD XTI VCOM PD AOUTL BICK AOUTR SDATA BVDD LRCK DIF1 SMUTE DIF0 DFS DEM1 DEM0
24 23 22 21 20 19 18 17 16 15 14 13
5VA DGND
20 BIT DAC
PGND GNDP
VD
GND
T C S
IN INA (9)
(3) INA IN DA D+A
303 N+ 7/16

Fig. 9

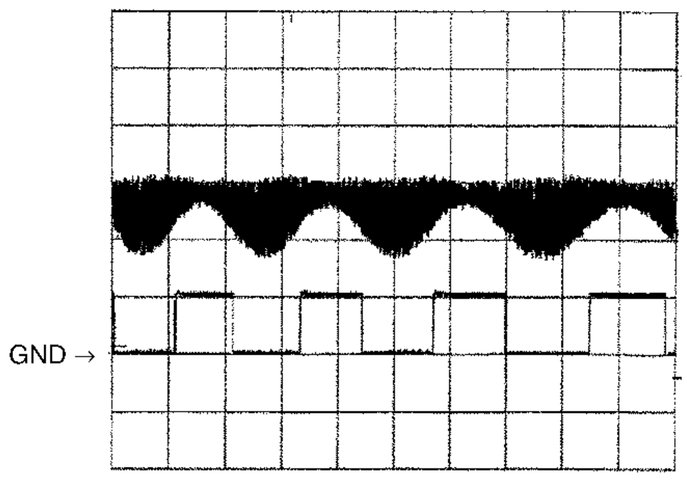
Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
REFO:2.5V

● Waveforms

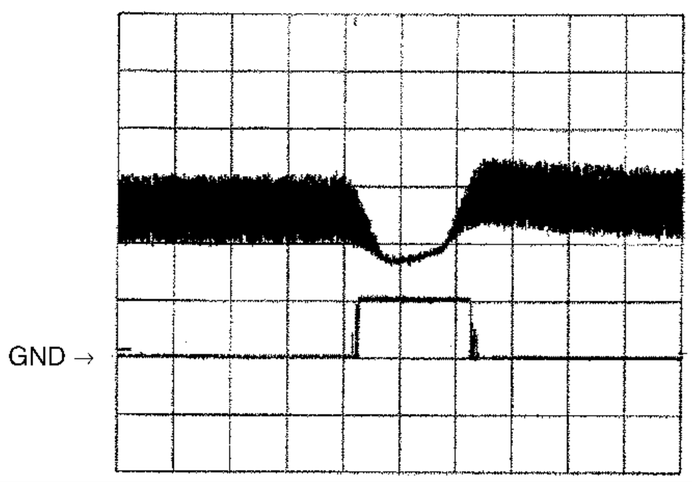
① RFO 0.5V/div. 0.5µs/div.
Normal mode: play



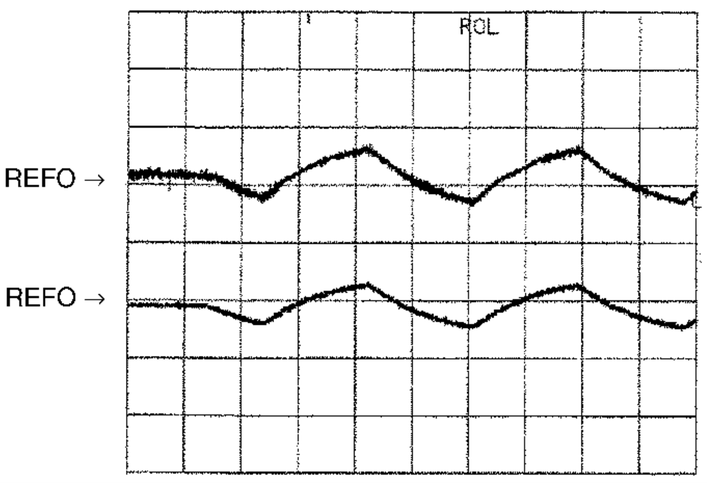
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Test mode: Tracking open



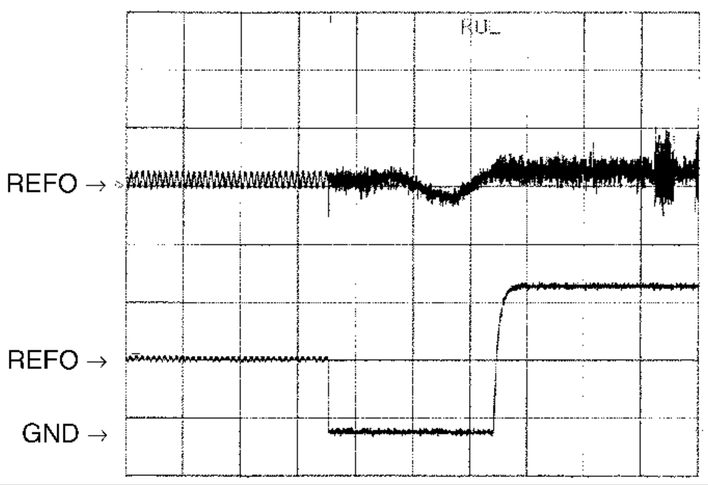
① CH1: RFO 1V/div.
② CH2: MIRR 5V/div. 0.5ms/div.
Normal mode: The defect part passes 800µm



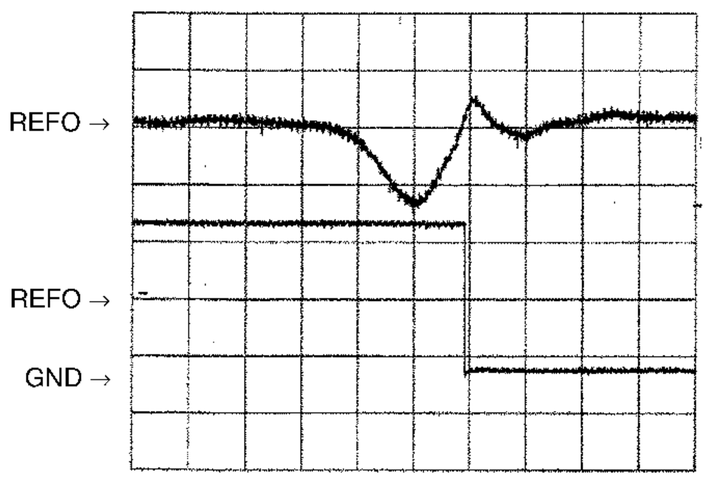
③ CH1: FIN 0.5V/div.
④ CH2: FO+ 2V/div. 0.2s/div.
Test mode: No disc, Focus close



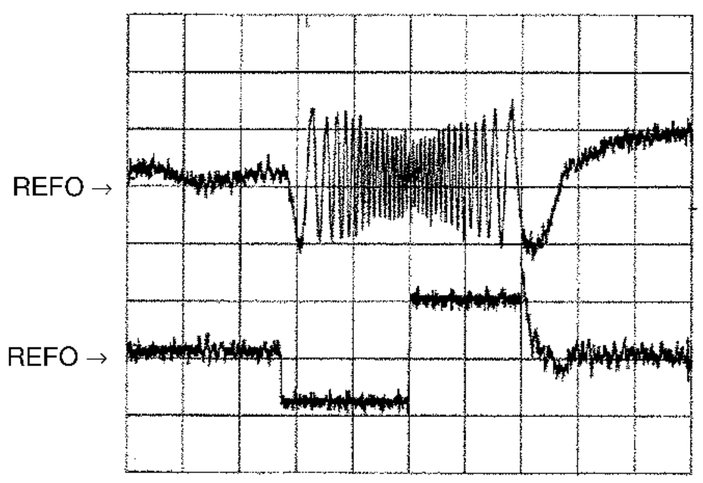
③ CH1: FIN 0.5V/div.
⑤ CH2: FOK 2V/div. 0.2s/div.
Normal mode: Focus close



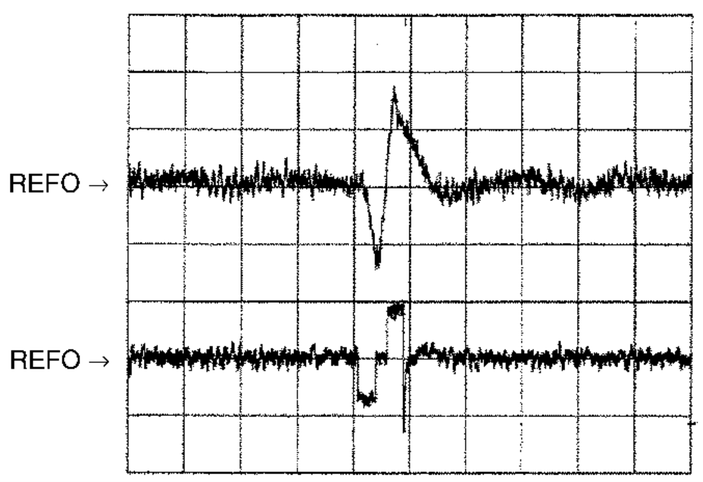
⑥ CH1: FEY 0.5V/div.
⑦ CH2: XSI 2V/div. 1ms/div.
Normal mode: Focus close



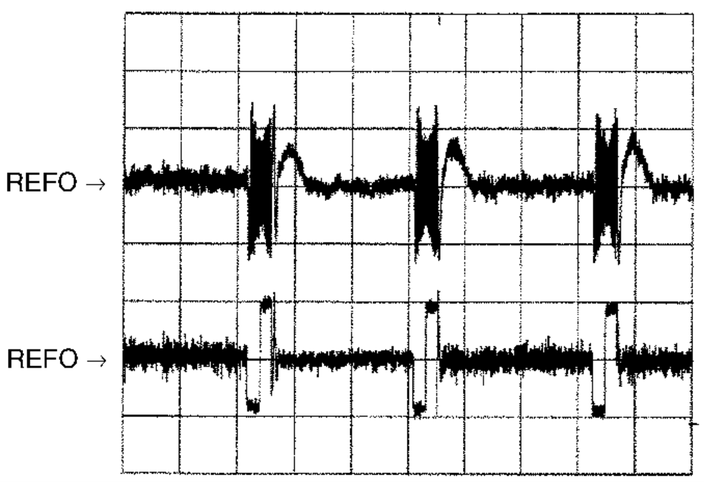
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Test mode: 32 tracks jump (FWD)



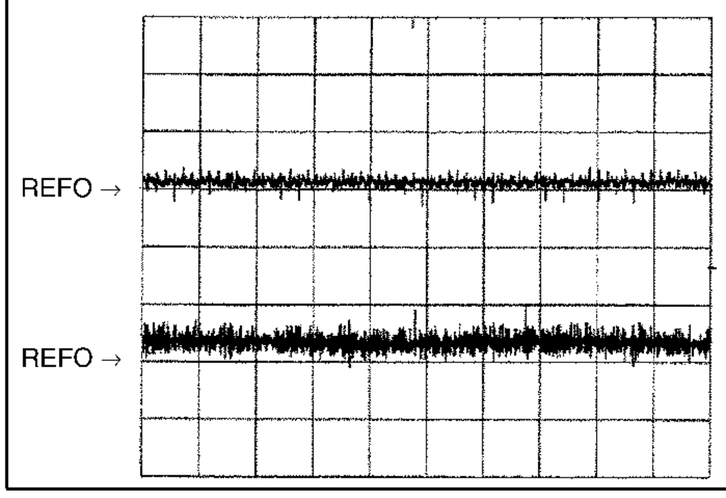
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 0.5ms/div.
Test mode: Single jump (FWD)



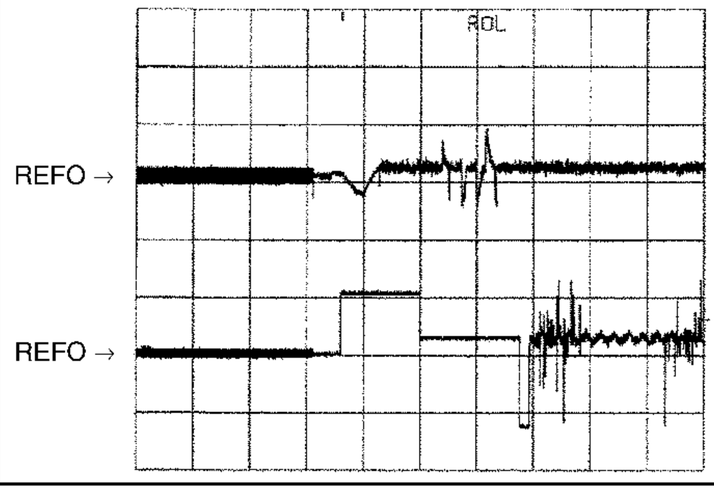
⑧ CH1: TEY 0.5V/div.
⑨ CH2: TIN 0.5V/div. 5ms/div.
Test mode: 100 tracks jump (FWD)



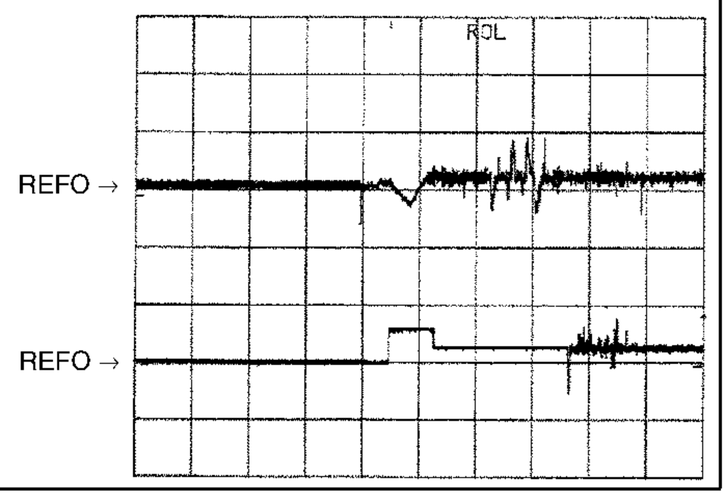
⑥ CH1: FEY 0.1V/div.
③ CH2: FIN 0.2V/div. 20ms/div.
Normal mode: Play



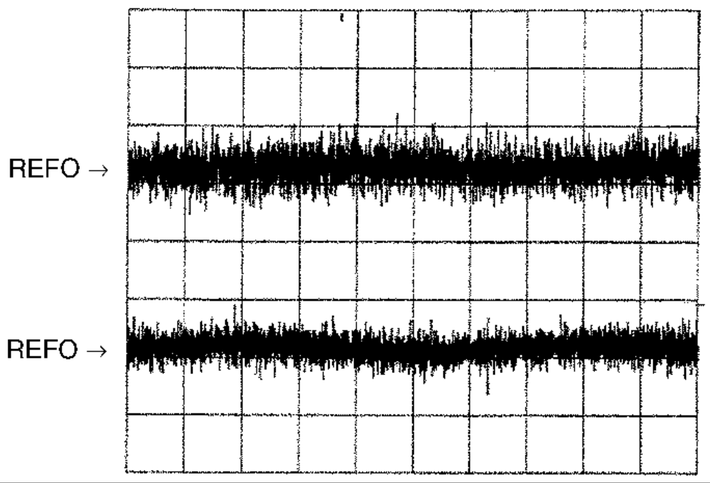
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus close (12cm)



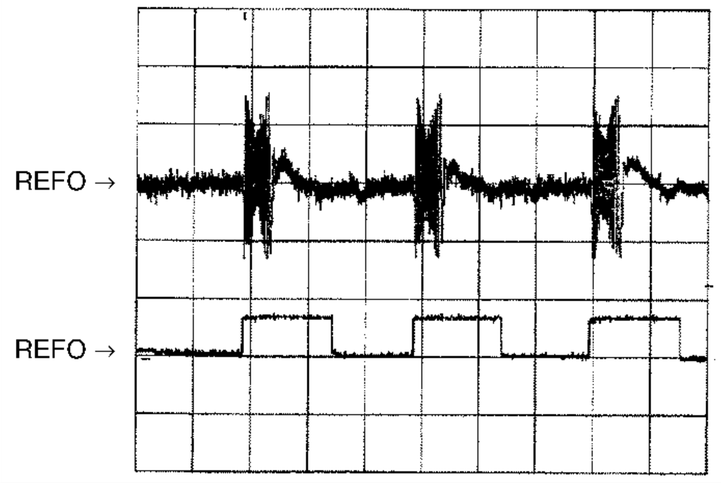
③ CH1: FIN 0.5V/div.
⑩ CH2: SIN 1V/div. 0.5s/div.
Normal mode: Focus close (8cm)



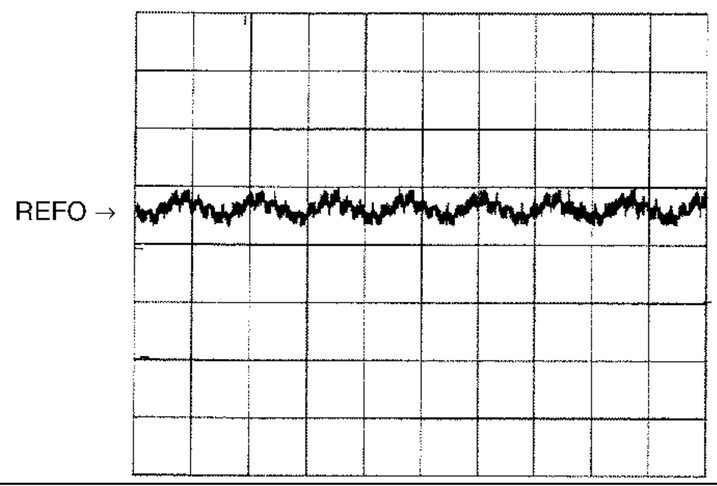
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TIN 0.2V/div.
20ms/div.
Normal mode: play



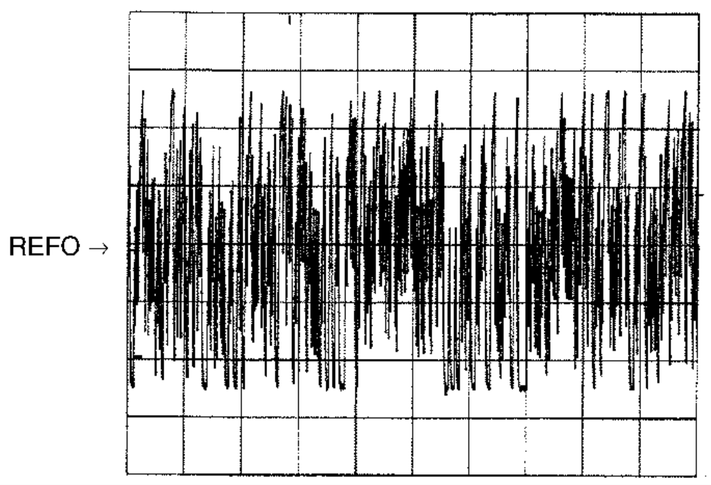
⑧ CH1: TEY 0.5V/div.
⑪ CH2: SD 0.5V/div.
5ms/div.



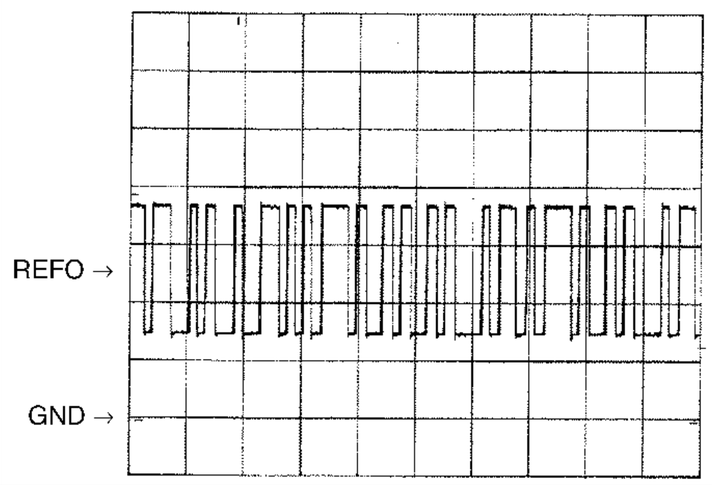
⑩ SIN 0.5V/div. 0.1s/div.
Normal mode: Play (12cm)



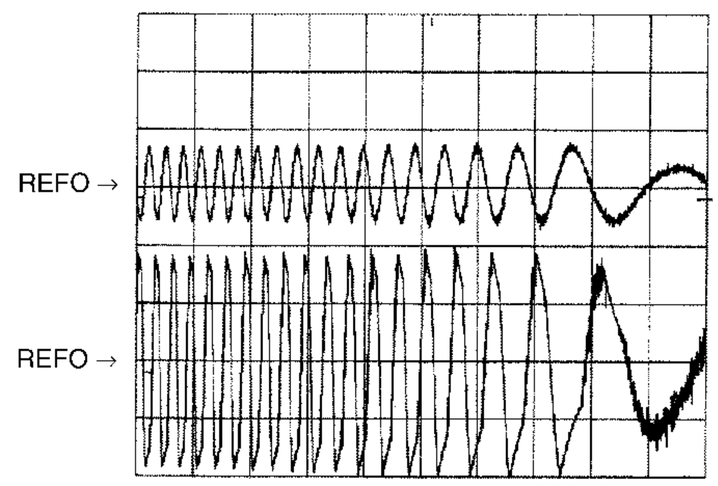
⑩ SIN 0.5V/div. 10ms/div.
Long Search (12cm)



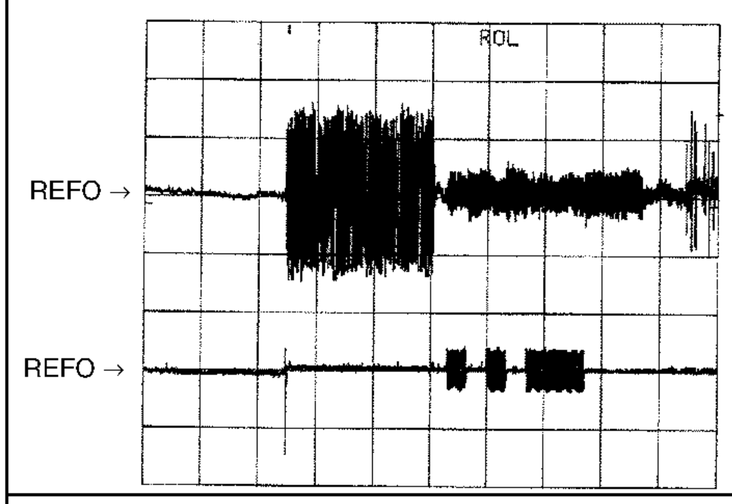
⑫ EFM 1V/div. 5µs/div.
Play



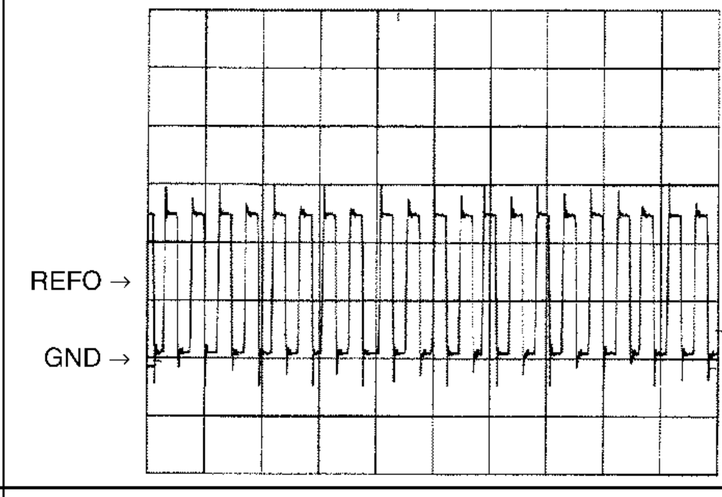
⑧ CH1: TEY 1V/div.
⑬ CH2: TEC 1V/div.
2ms/div.
Test mode: Focus close
Tracking open



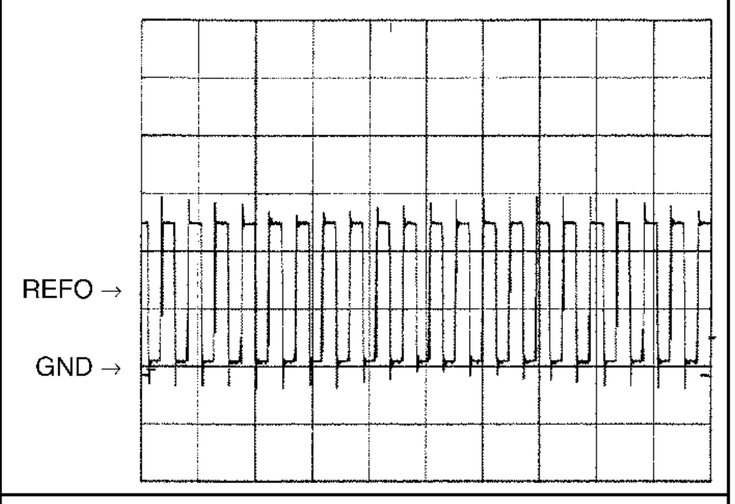
⑧ CH1: TEY 0.5V/div.
⑥ CH2: FEY 0.5V/div.
0.2s/div.
Normal mode: AGC after focus close



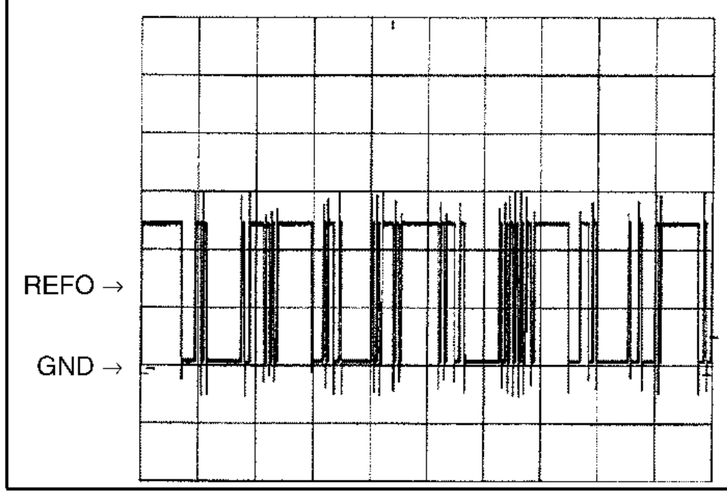
⑭ PLCK 2V/div. 0.5µs/div.
Play



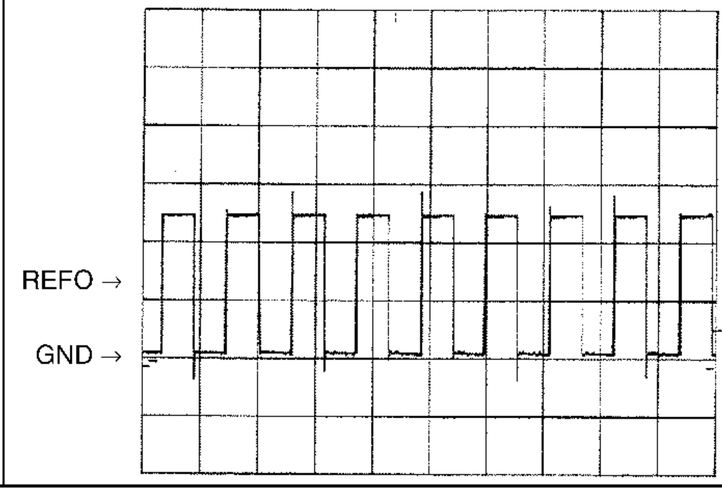
⑮ SCKO 2V/div. 1µs/div.
Play



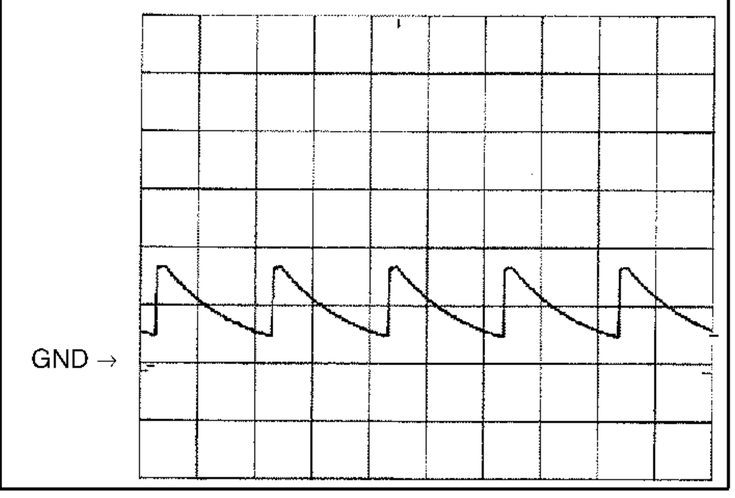
⑯ Dout 2V/div. 10µs/div.
Play



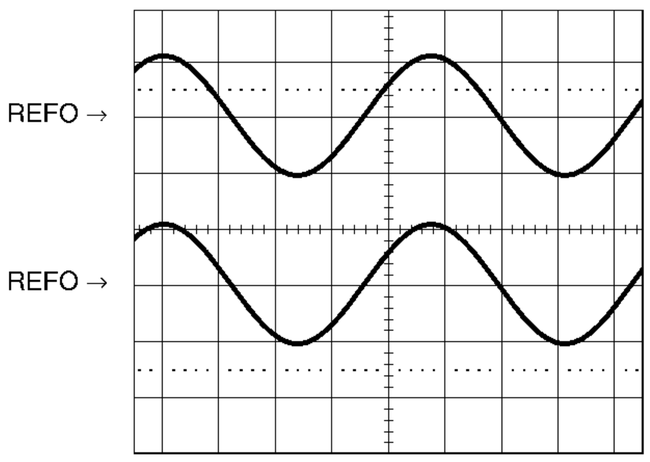
⑰ LRCK 2V/div. 20µs/div.



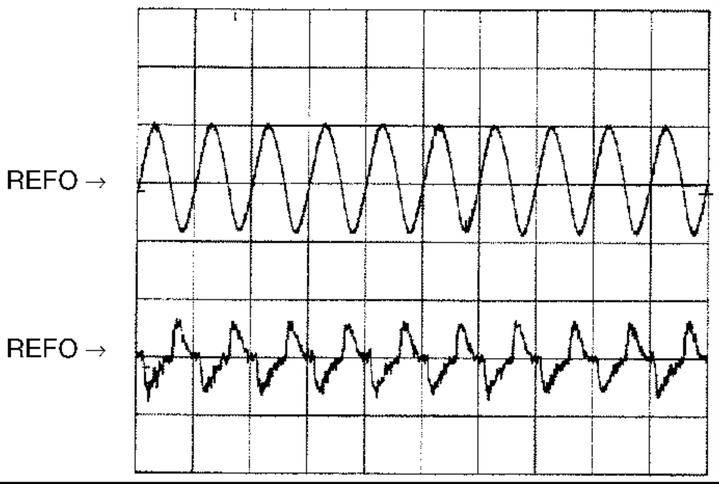
⑱ VD 5V/div. 50ms/div.
Normal mode: No disc



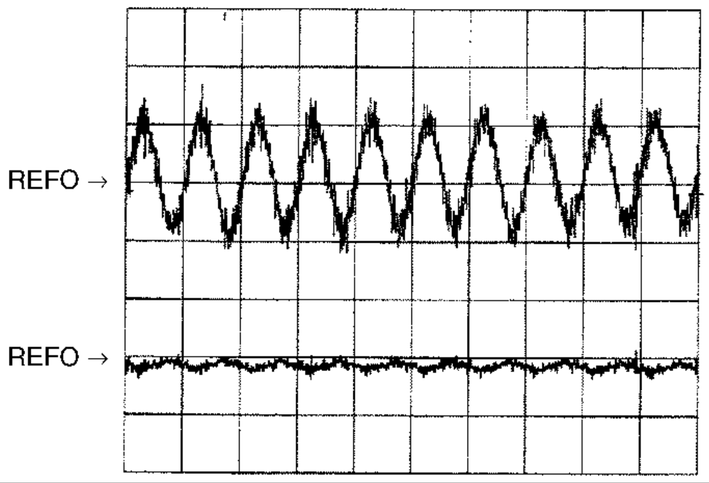
⑲ CH1: R OUT 1V/div.
⑳ CH2: L OUT 1V/div. 0.2ms/div.
Normal mode: Play (1kHz 0dB)



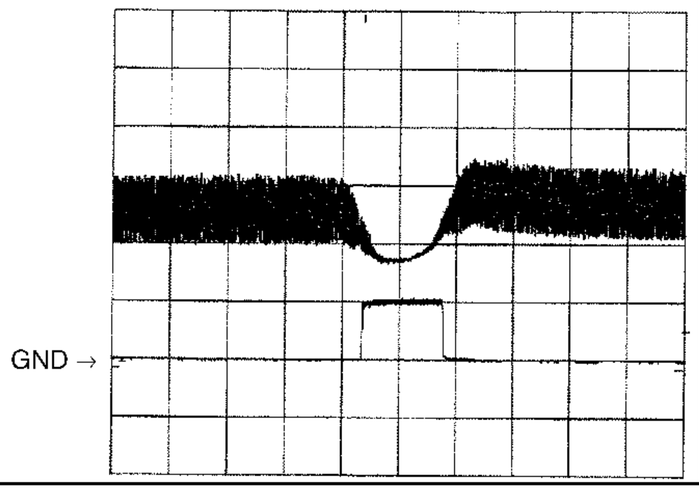
⑥ CH1: FEY 0.2V/div.
③ CH2: FIN 0.5V/div. 1ms/div.
Normal mode: During AGC



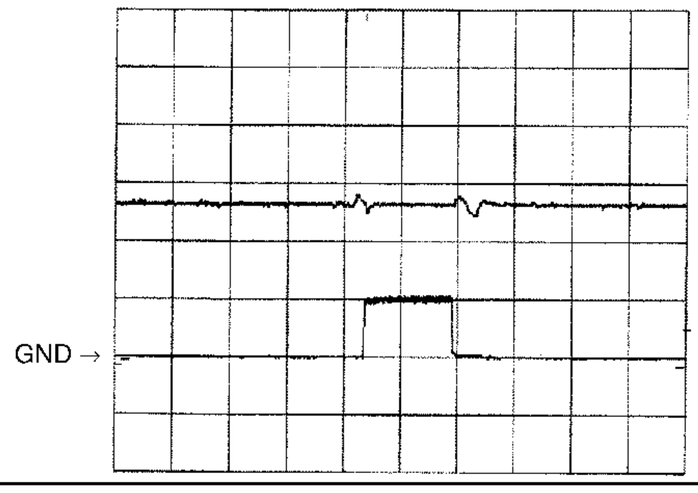
⑧ CH1: TEY 0.2V/div.
⑨ CH2: TIN 0.5V/div. 1ms/div.



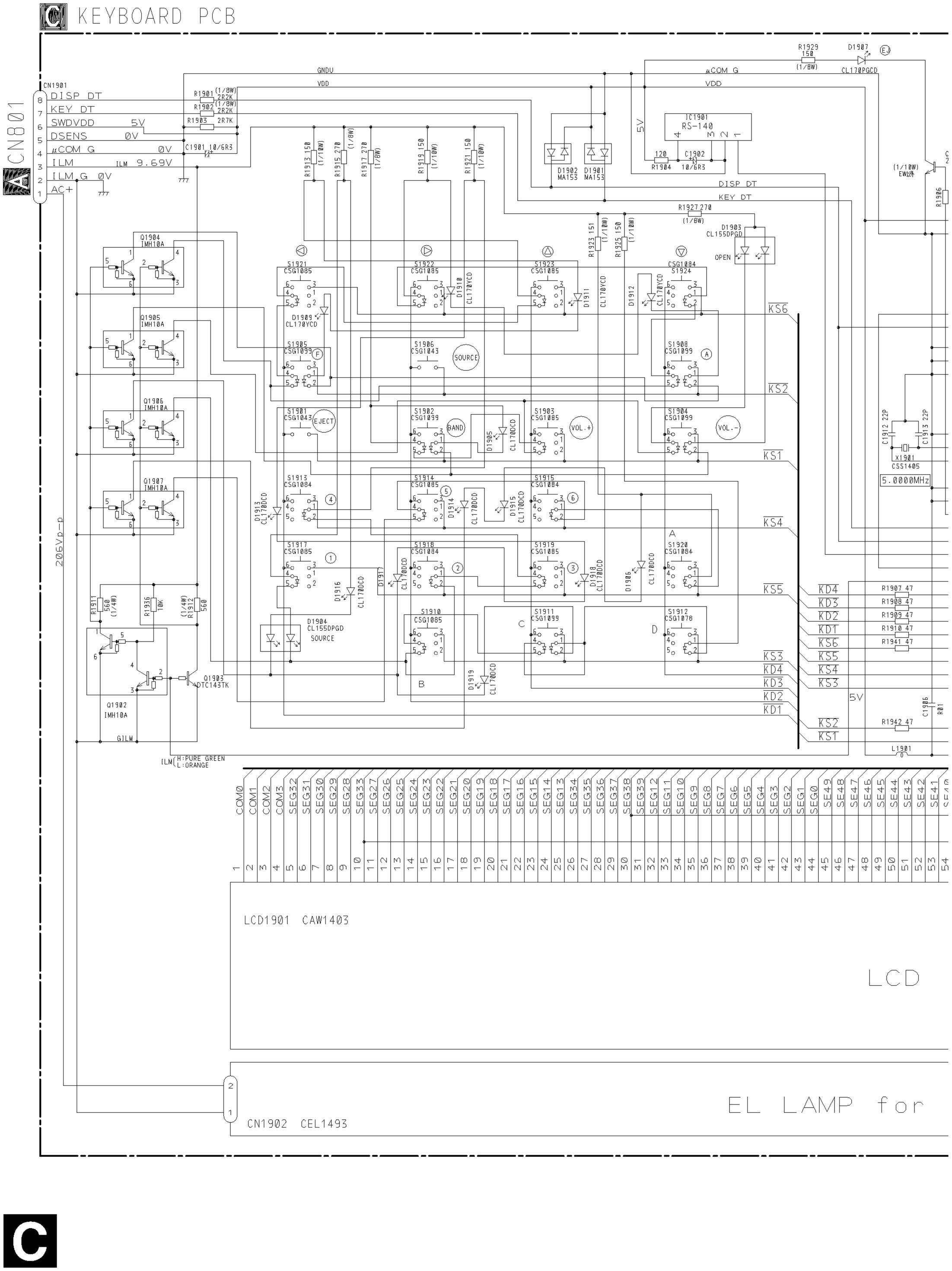
① CH1: RFO 1V/div.
㉑ CH2: HOLD 5V/div. 0.5ms/div.
Normal mode: The defect part passes
800µm



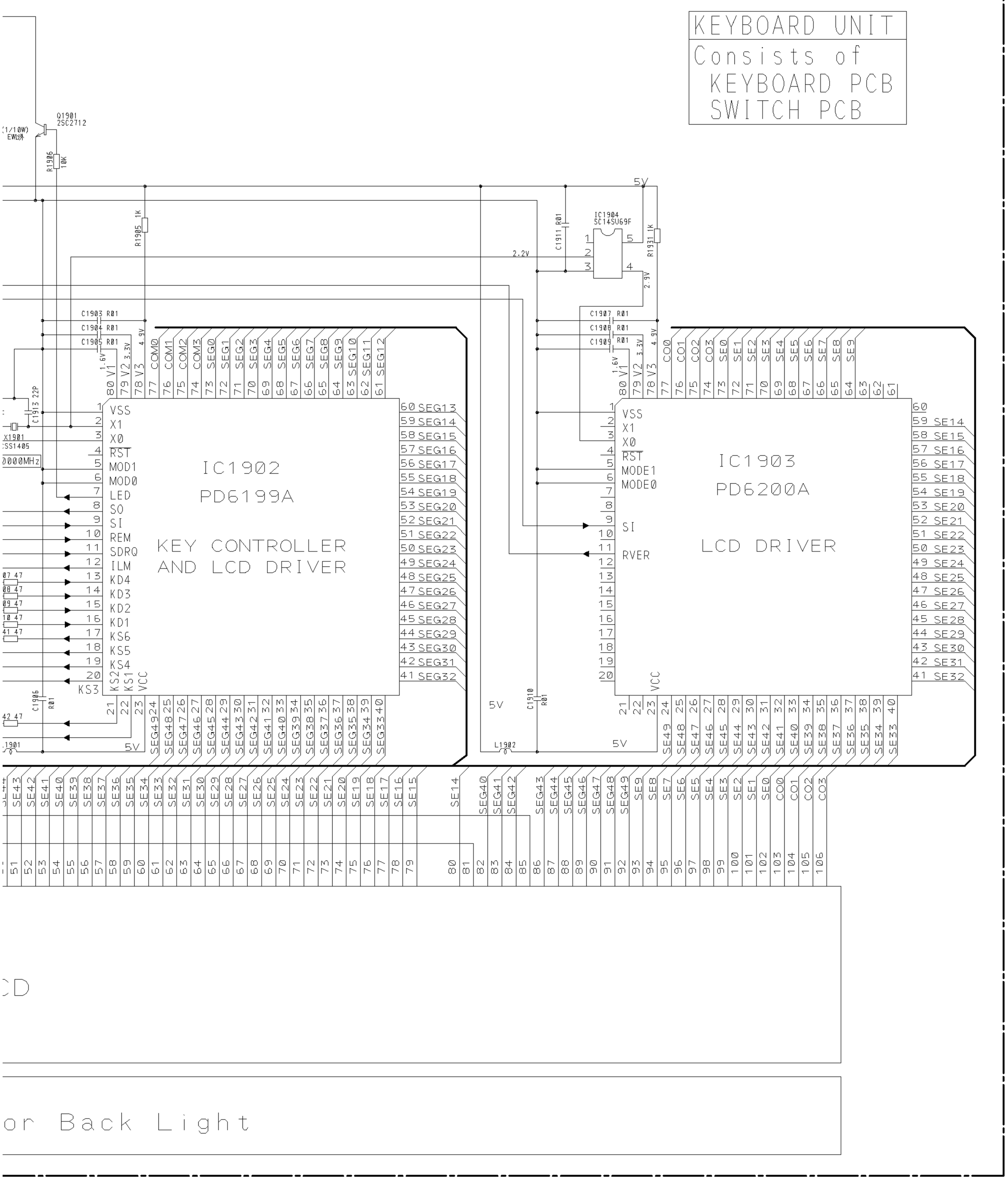
③ CH1: FIN 1V/div.
㉑ CH2: HOLD 5V/div. 0.5ms/div.
Normal mode: The defect part passes
800µm



3.3 KEYBOARD PCB

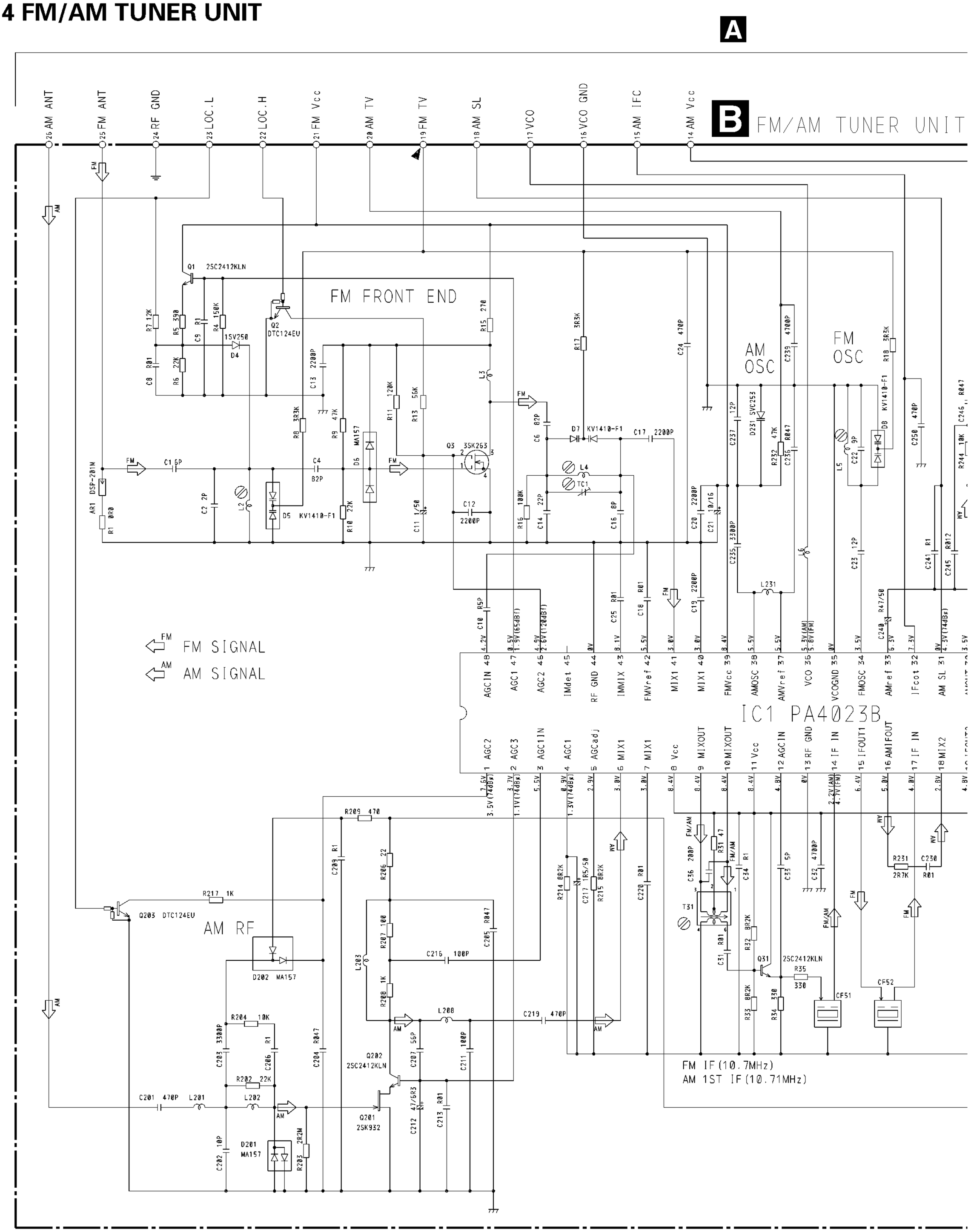


KEYBOARD UNIT
Consists of
KEYBOARD PCB
SWITCH PCB



or Back Light

3.4 FM/AM TUNER UNIT



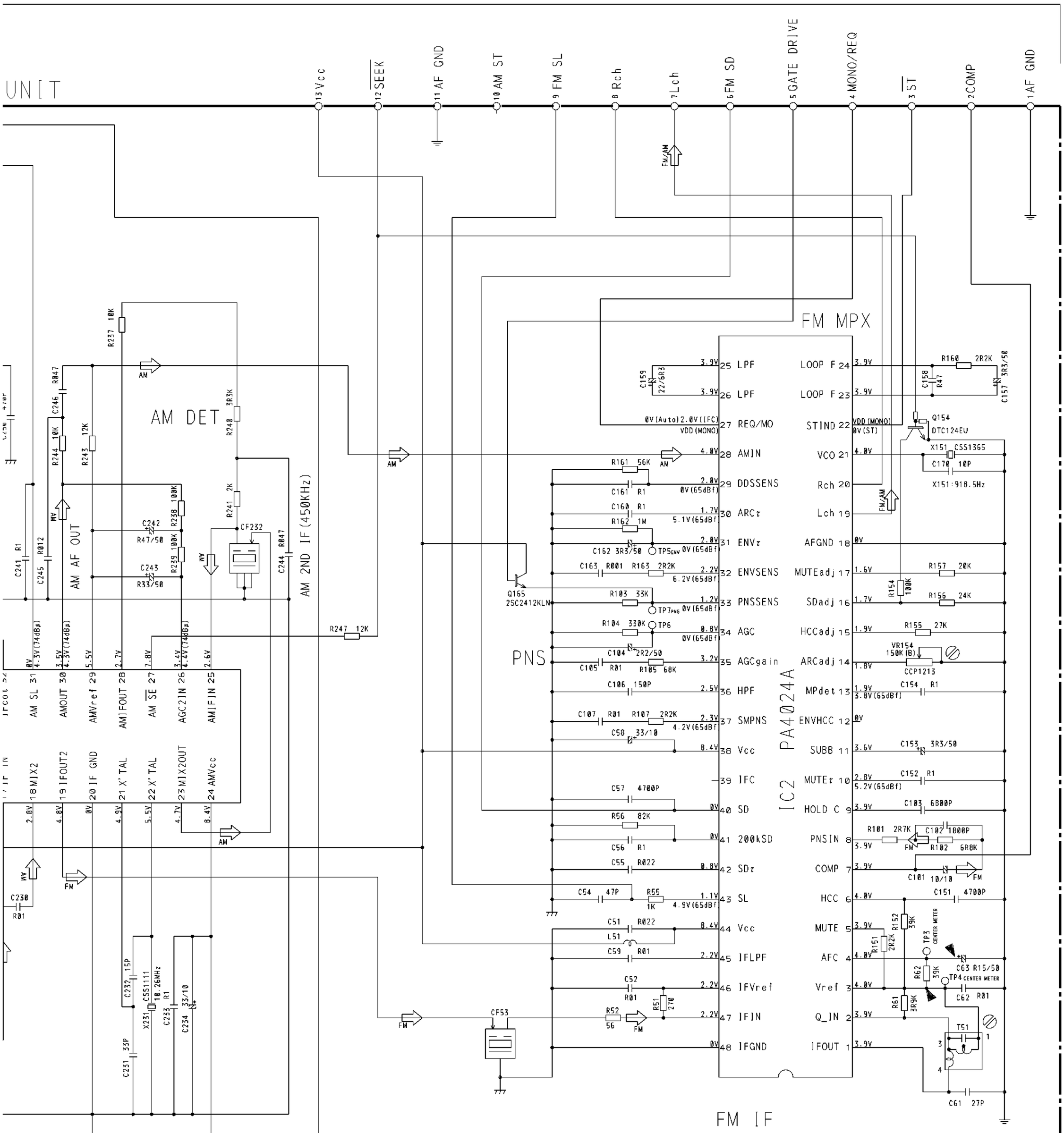


Fig. 11

3.5 HIGH OUTPUT UNIT

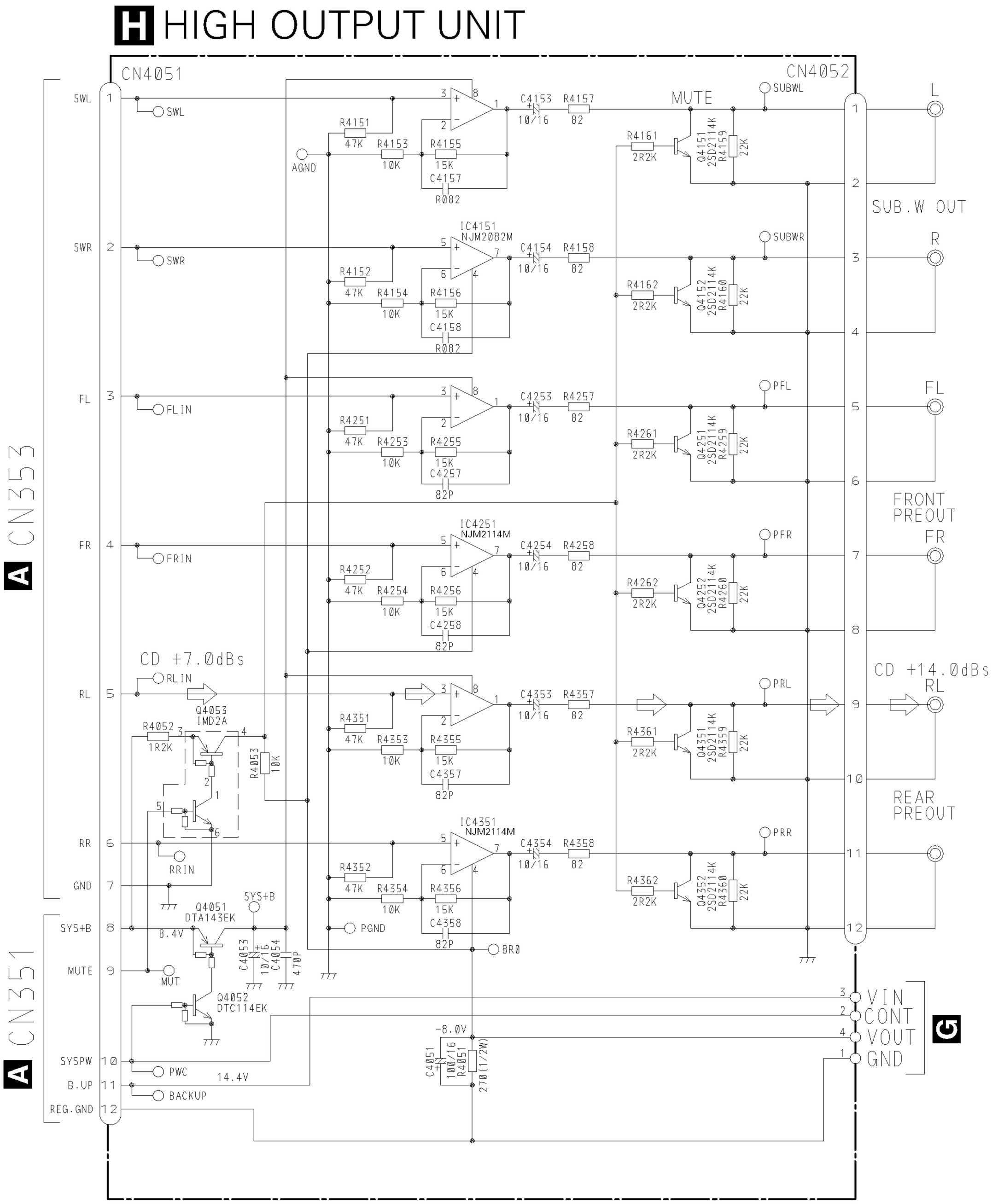


Fig. 12

3.6 DC/DC CONVERTER UNIT

G DC/DC CONVERTER UNIT

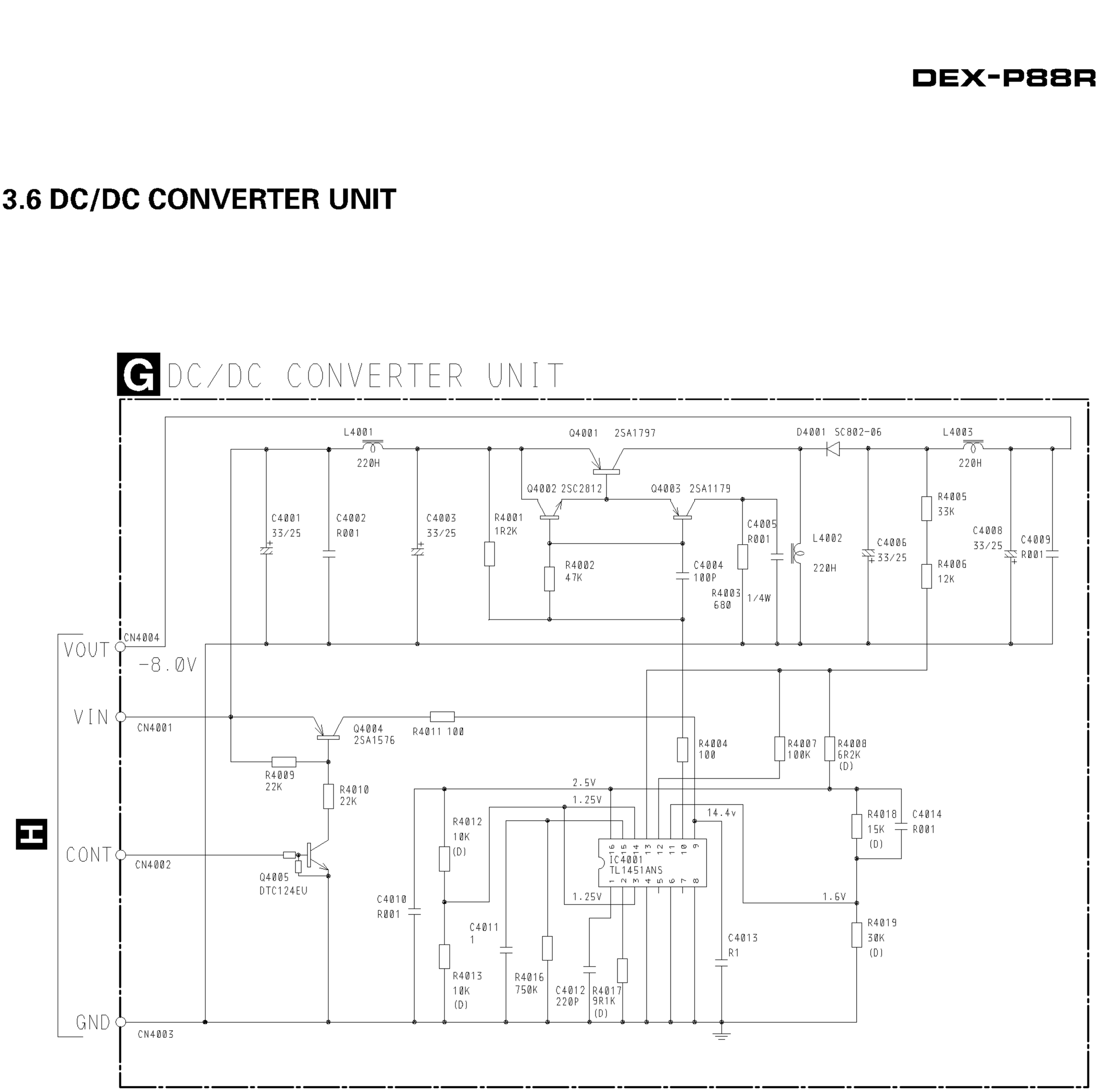


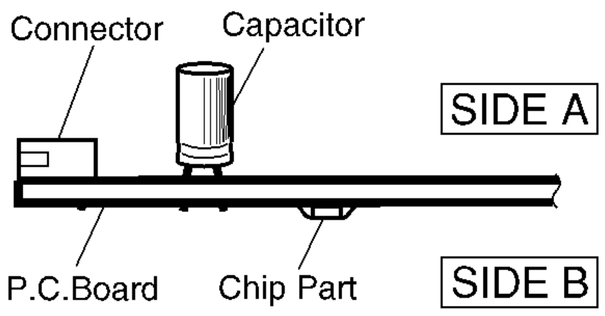
Fig. 13

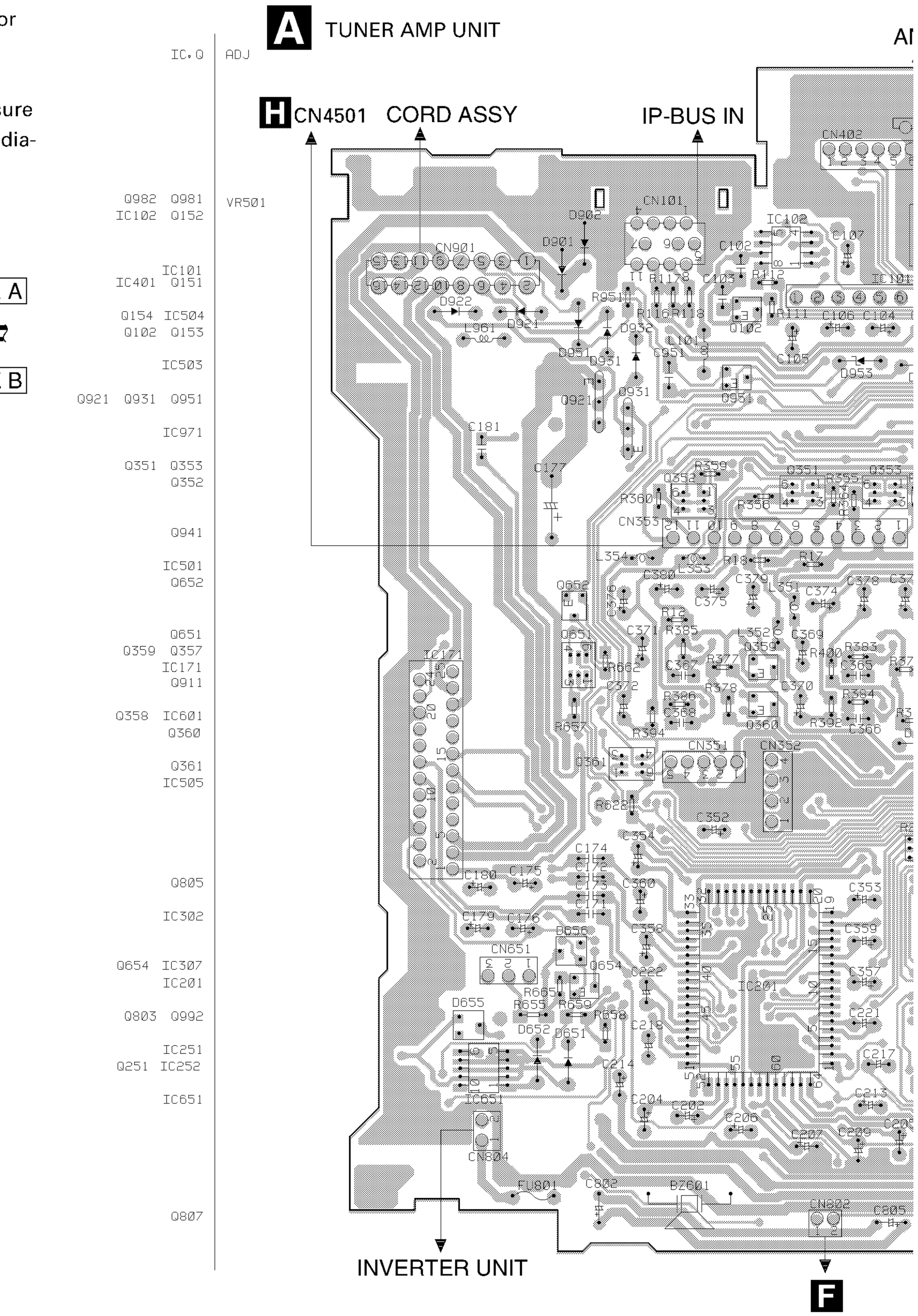
4. PCB CONNECTION DIAGRAM

4.1 TUNER AMP UNIT

NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams





SIDE A

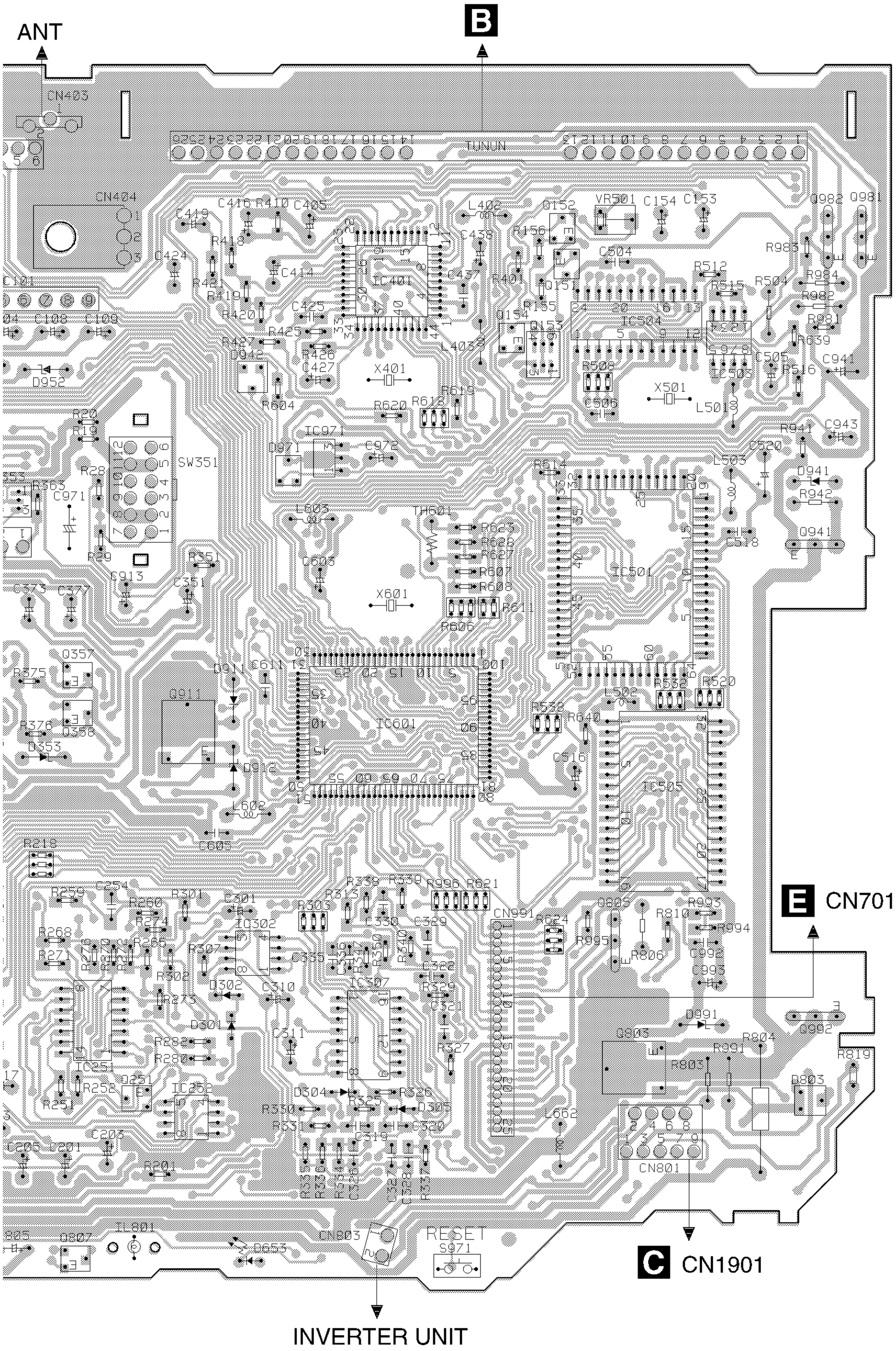
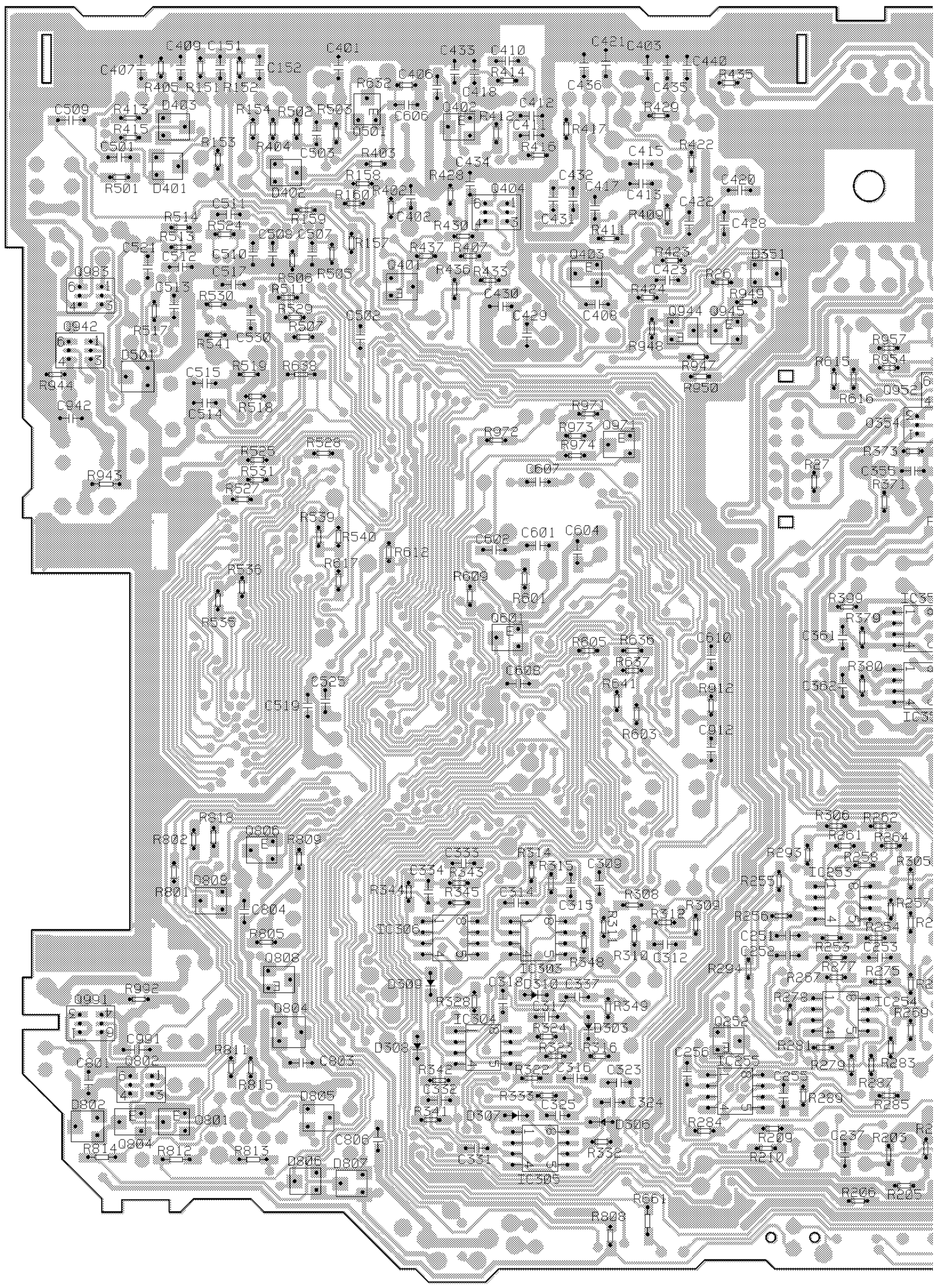
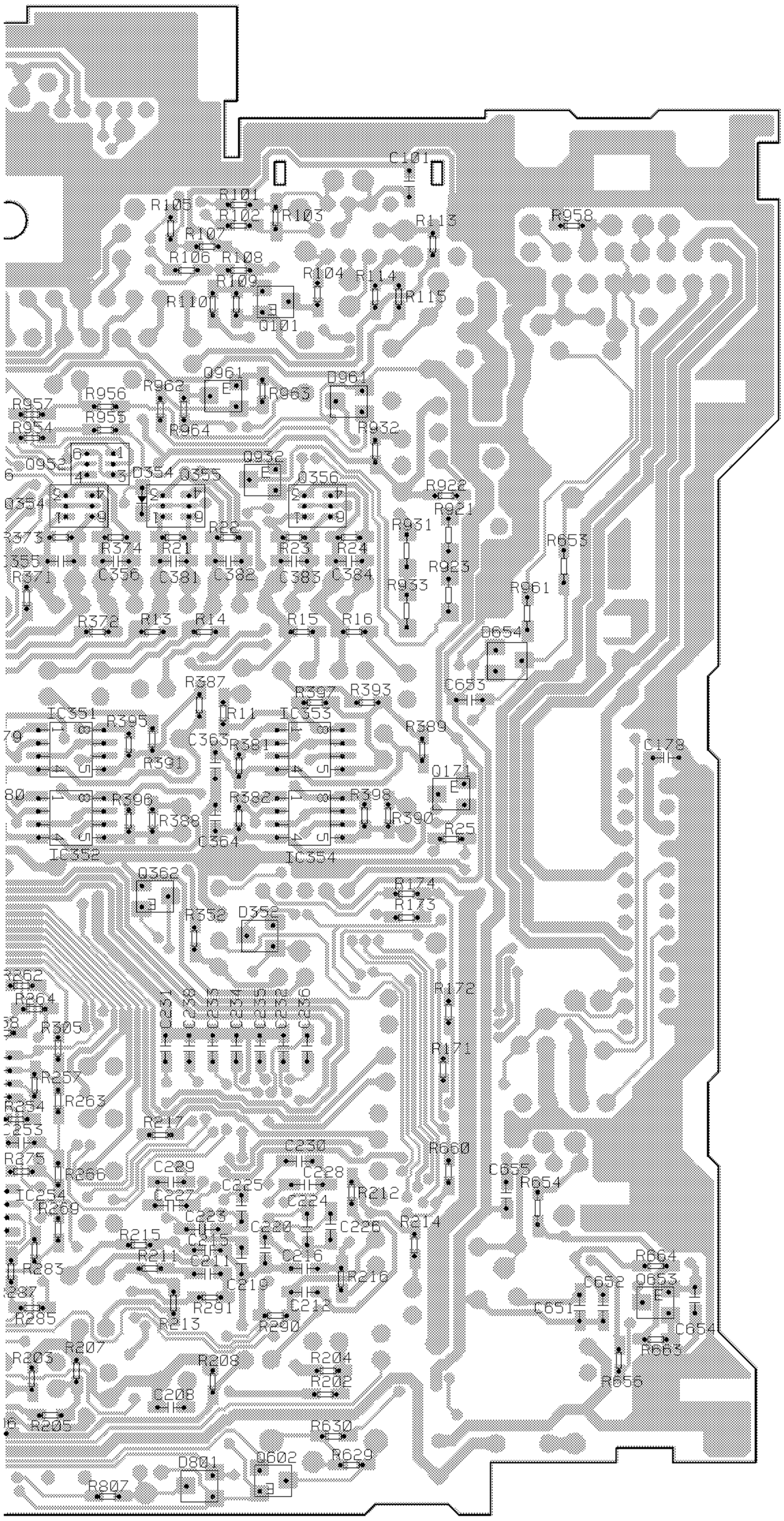

ANT
B
CN403
CN404
TUNUN
SW351
IC401
IC504
IC601
IC501
IC505
IC971
IC302
IC307
IC251
IC252
X401
X501
X601
L501
L503
L506
L602
L603
TH601
CN991
CN801
CN803
RESET
S971
IL801
E CN701
C CN1901
INVERTER UNIT

Fig. 14

A TUNER AMP UNIT



SIDE B



IC, Q

Q402
Q501

Q404

Q403
Q983 Q401 Q101

Q944 Q945
Q942 Q961

Q932
Q952 Q355
Q356
Q971 Q354

IC351 IC353
Q601
Q171

IC352 IC354
Q362

Q806

IC253

IC306

Q808 IC303

Q991 IC254
IC304 Q252

Q802 IC255 Q653

Q801
Q804

IC305

Q602

Fig. 15

4.2 CD MECHANISM MODULE

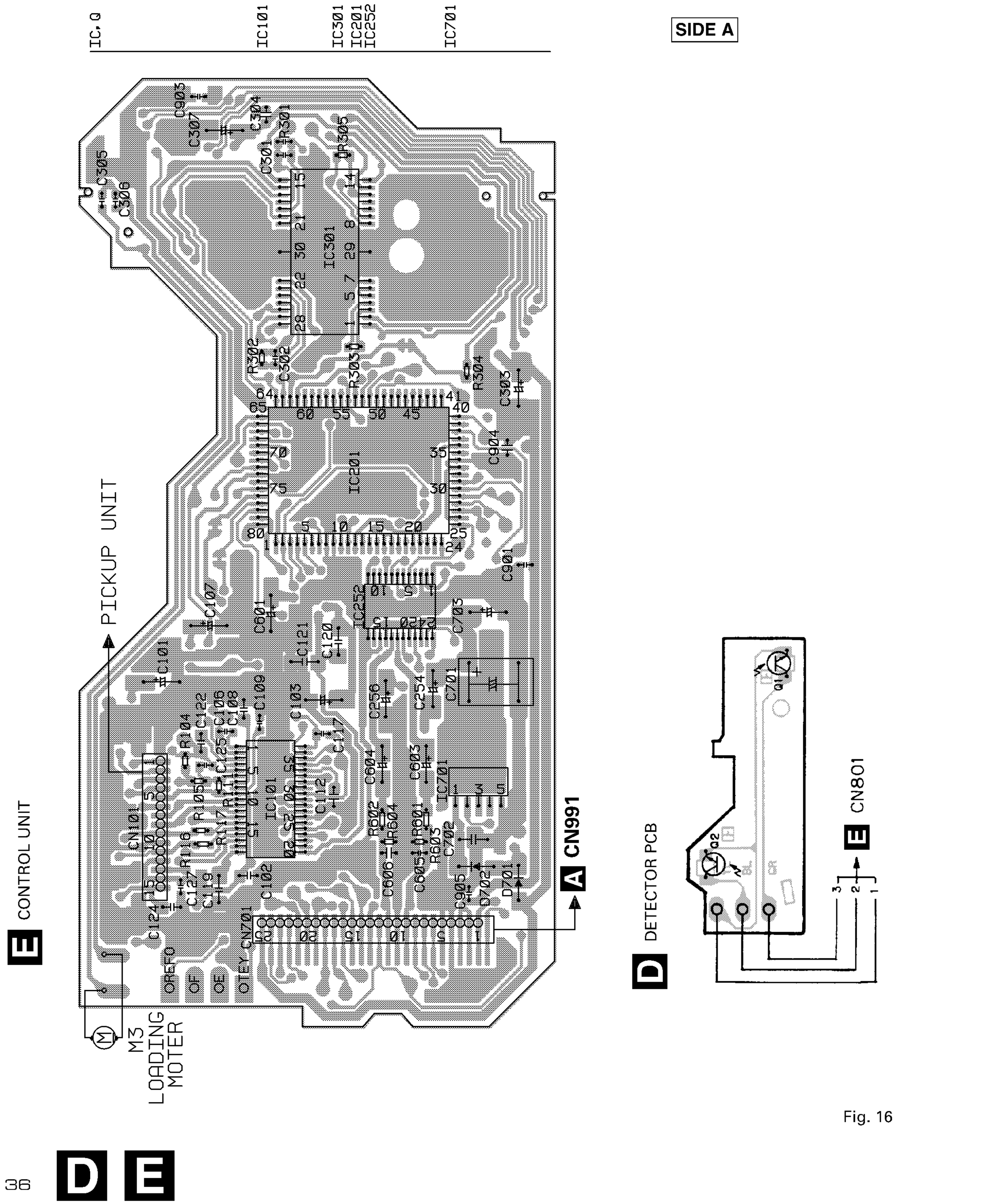
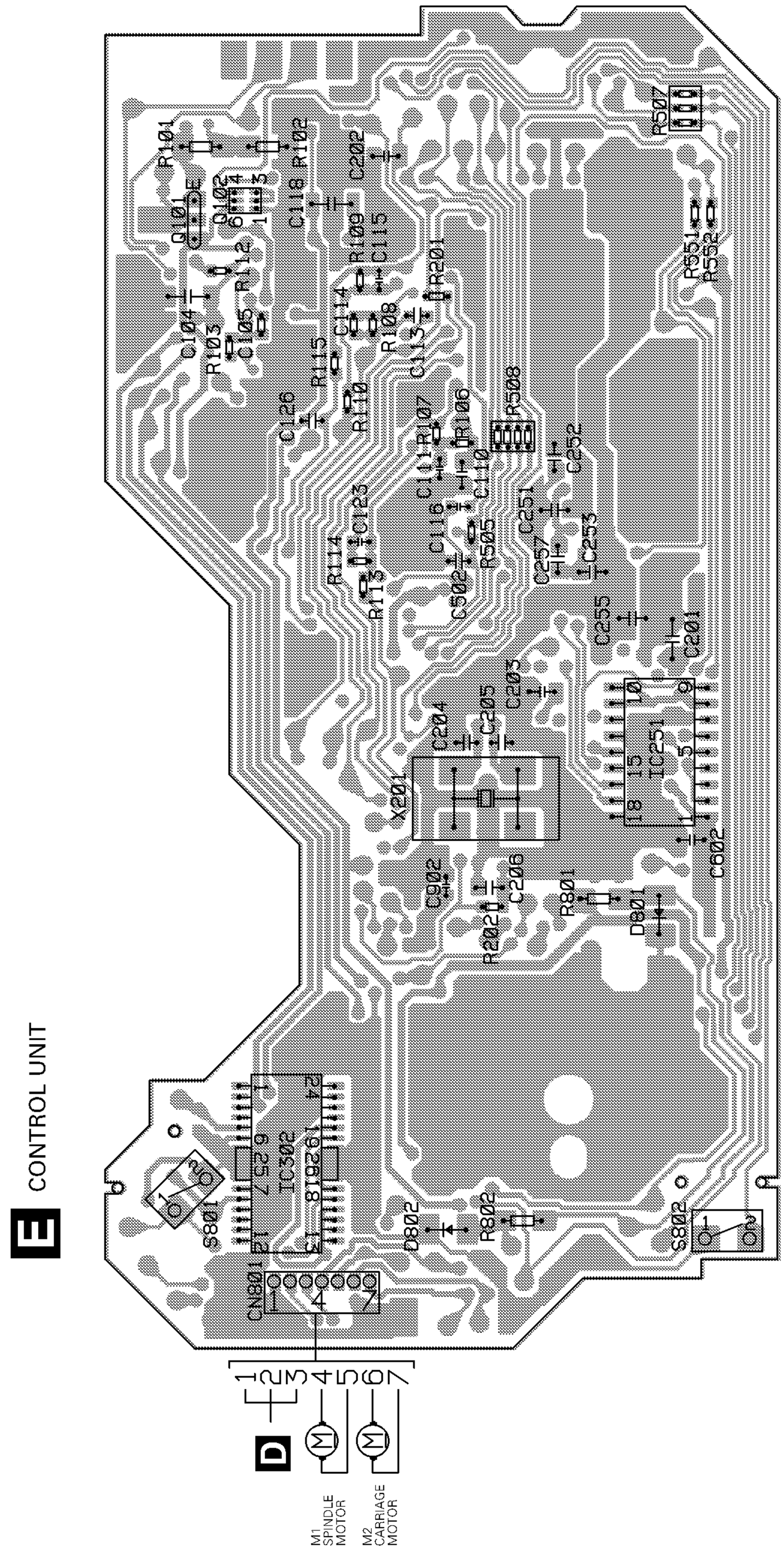


Fig. 16

SIDE B



E CONTROL UNIT

Fig. 17

4.3 KEYBOARD PCB

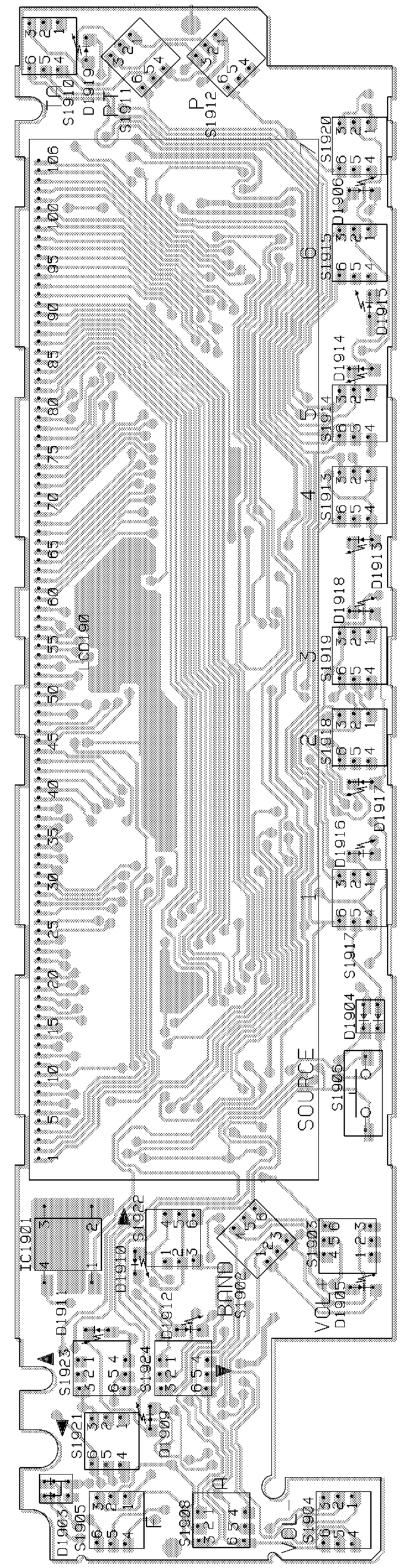


Fig. 18

4.4 SWITCH PCB

SIDE B

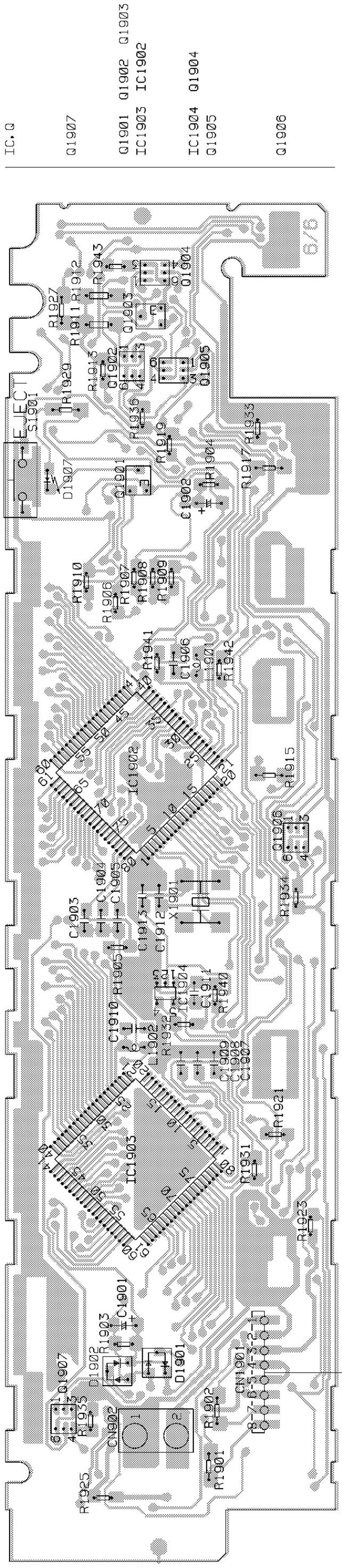


Fig. 19

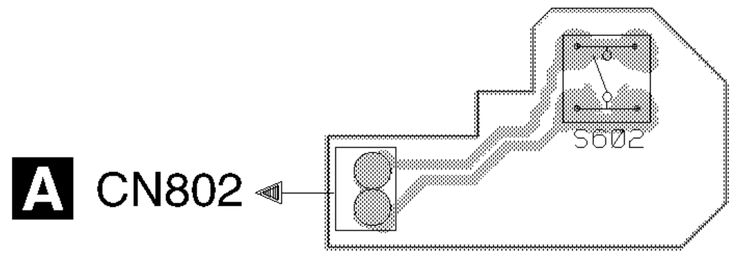


Fig. 20

4.5 FM/AM TUNER UNIT

SIDE A

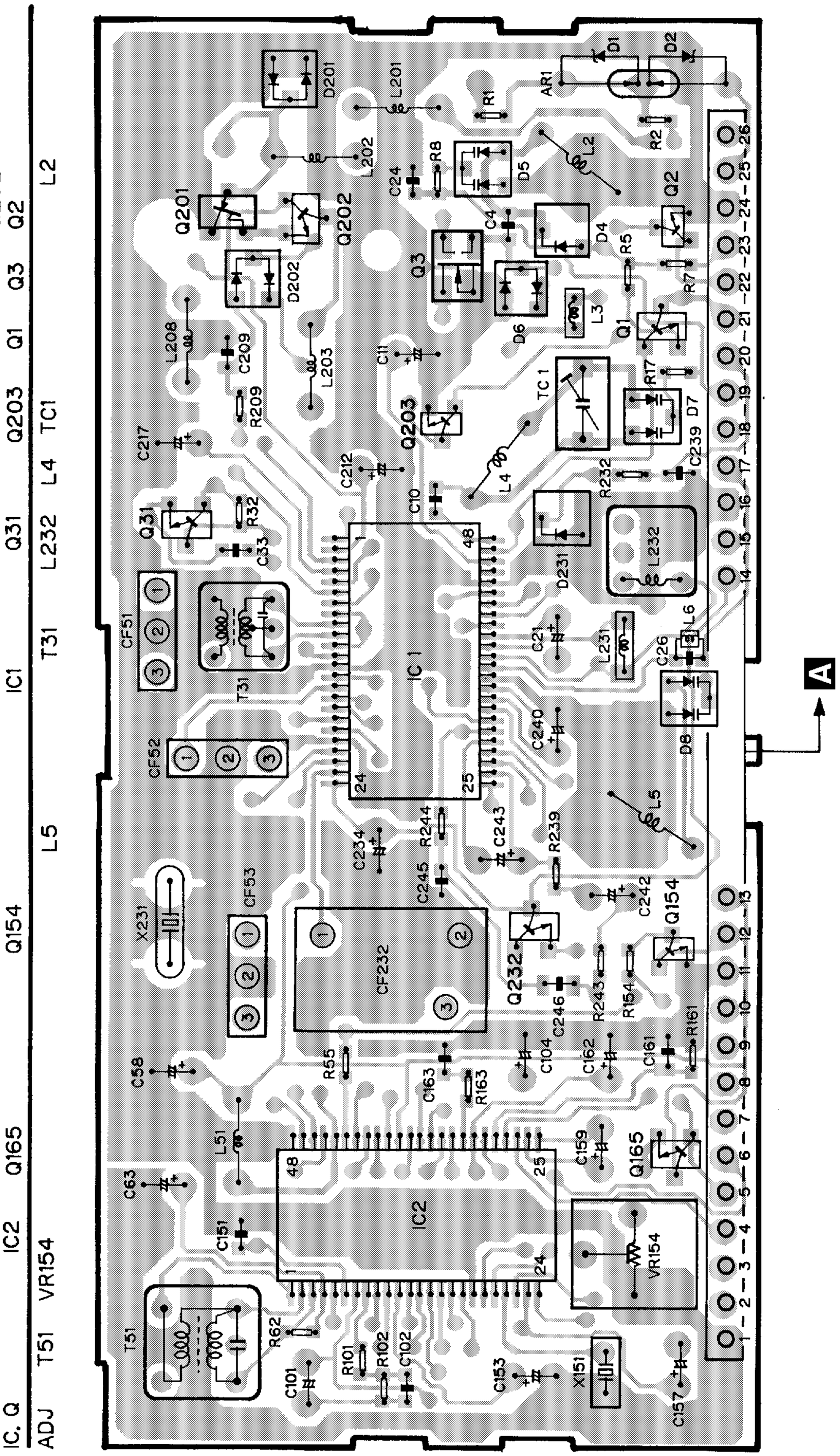
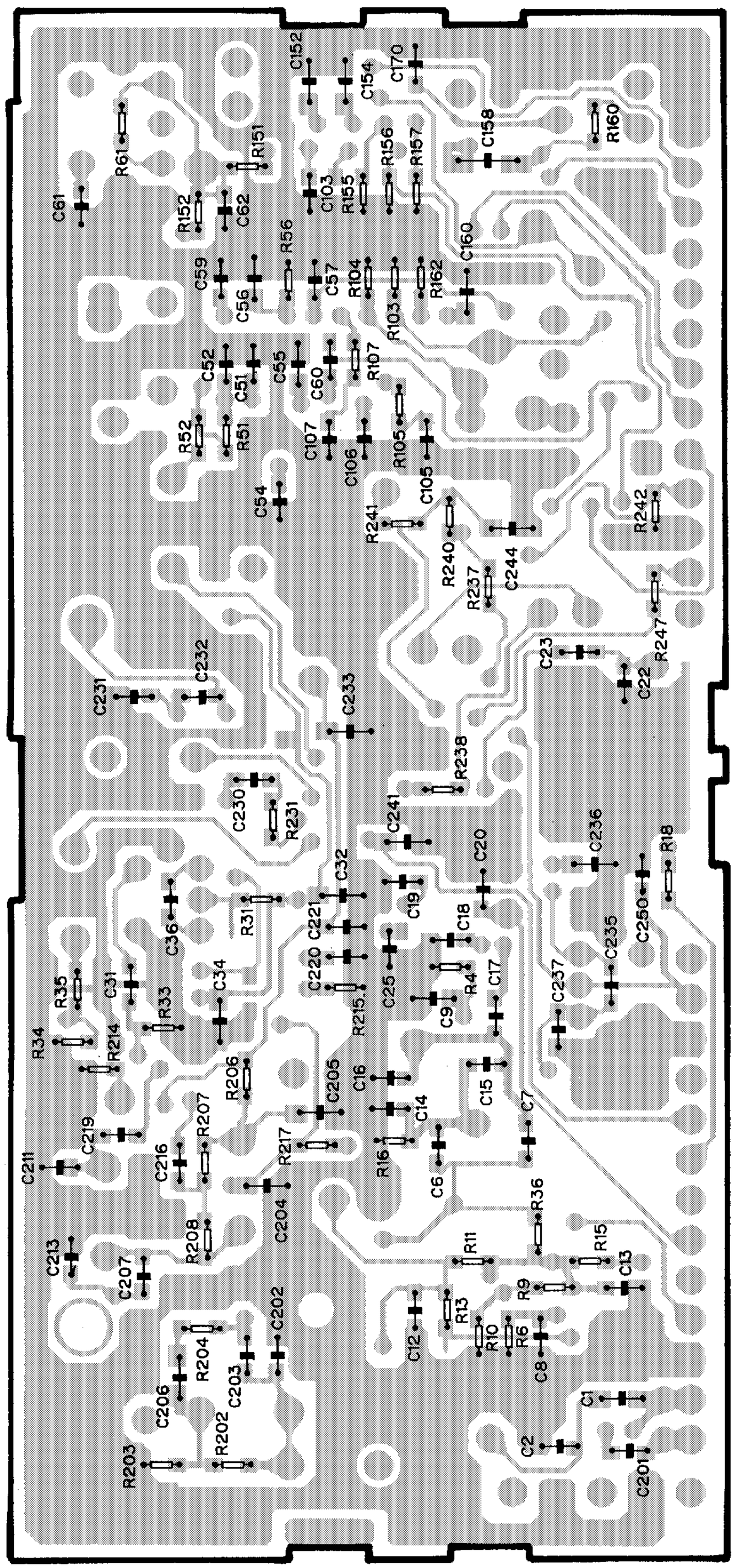


Fig. 21

SIDE B



B FM/AM TUNER UNIT

Fig. 22

4.7 HIGH OUTPUT UNIT

H HIGH OUTPUT UNIT

SIDE A

IC, Q

Q4151
Q4152
Q4252
Q4051
Q4352
Q4053 Q4052

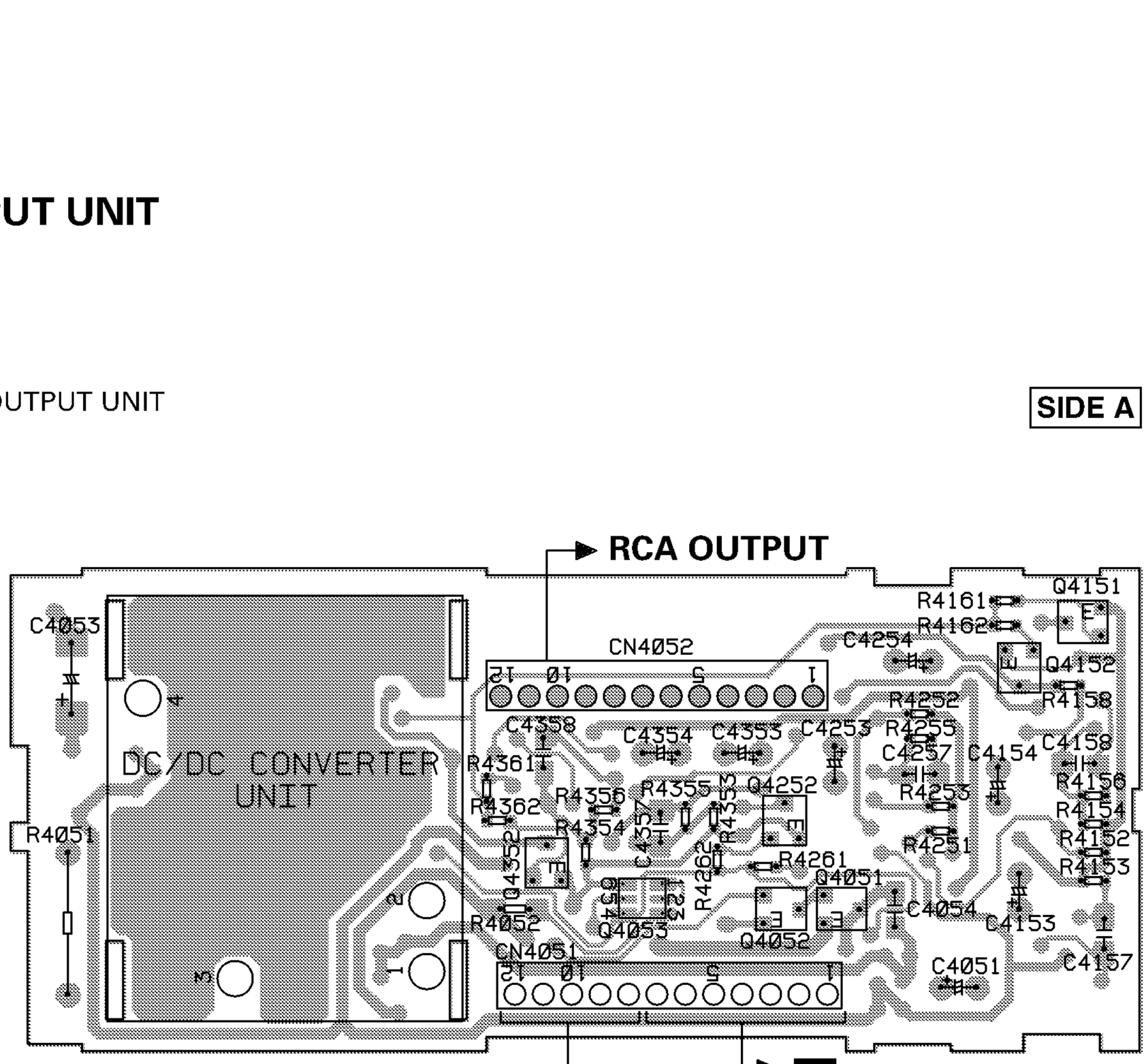


Fig. 23

SIDE B

H HIGH OUTPUT UNIT

IC, Q

IC4251

IC4351 Q4351
Q4251
IC4151

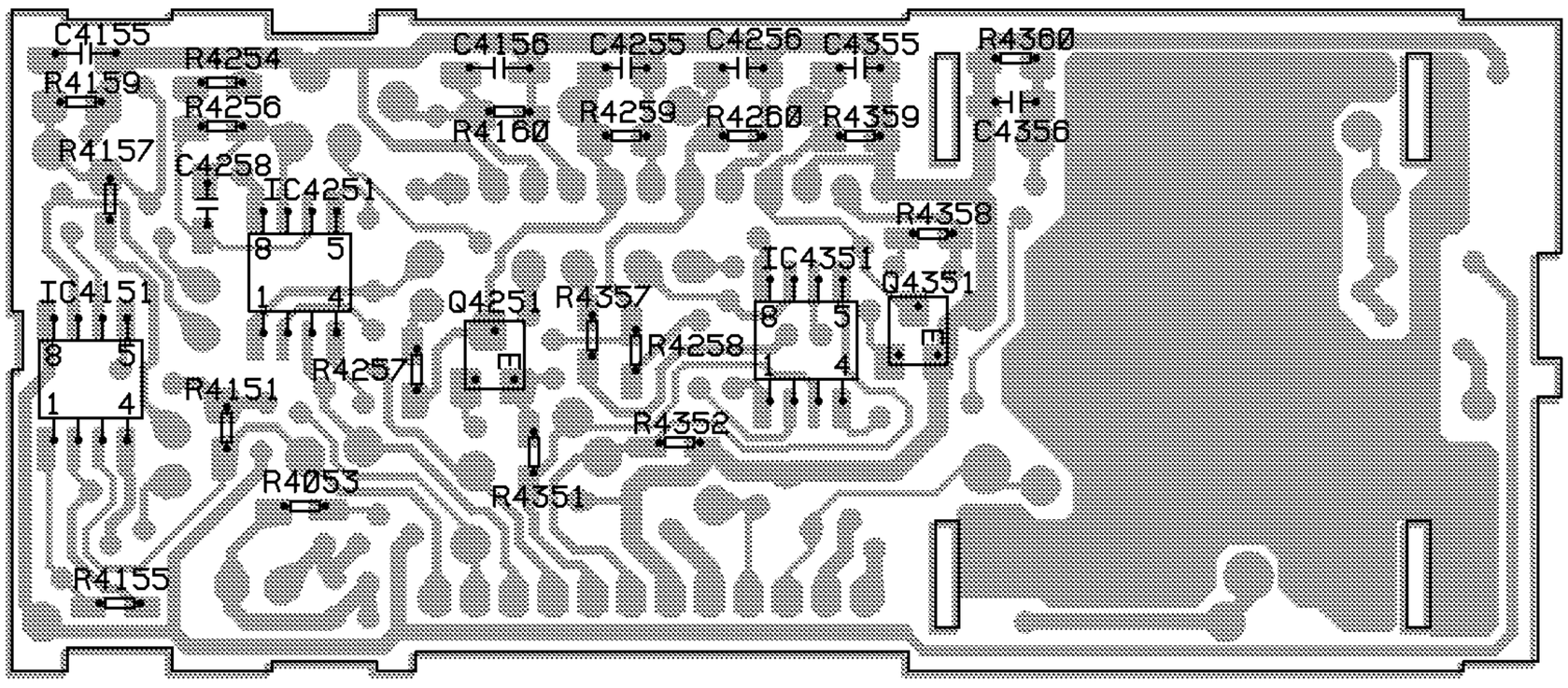


Fig. 24

4.8 DC/DC CONVERTER UNIT

SIDE A

G DC/DC CONVERTER UNIT

IC, Q

Q4001

IC4001
Q4002

Q4003

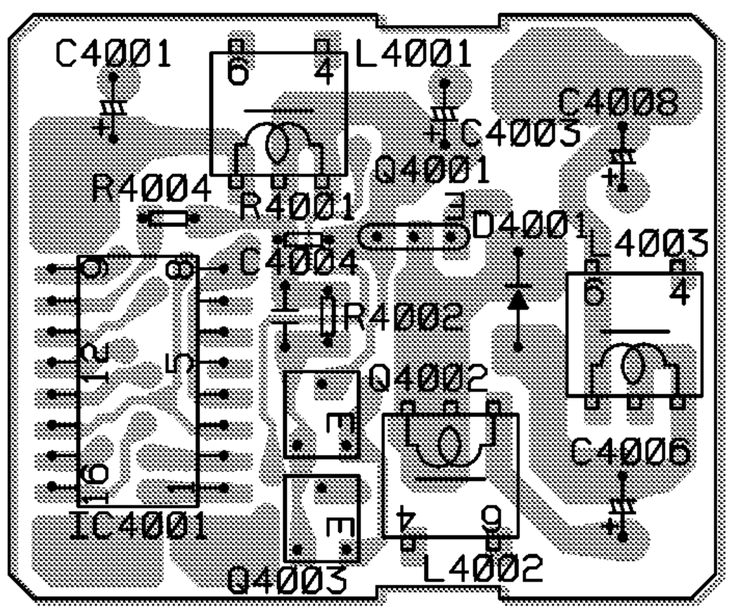


Fig. 25

SIDE B

G DC/DC CONVERTER UNIT

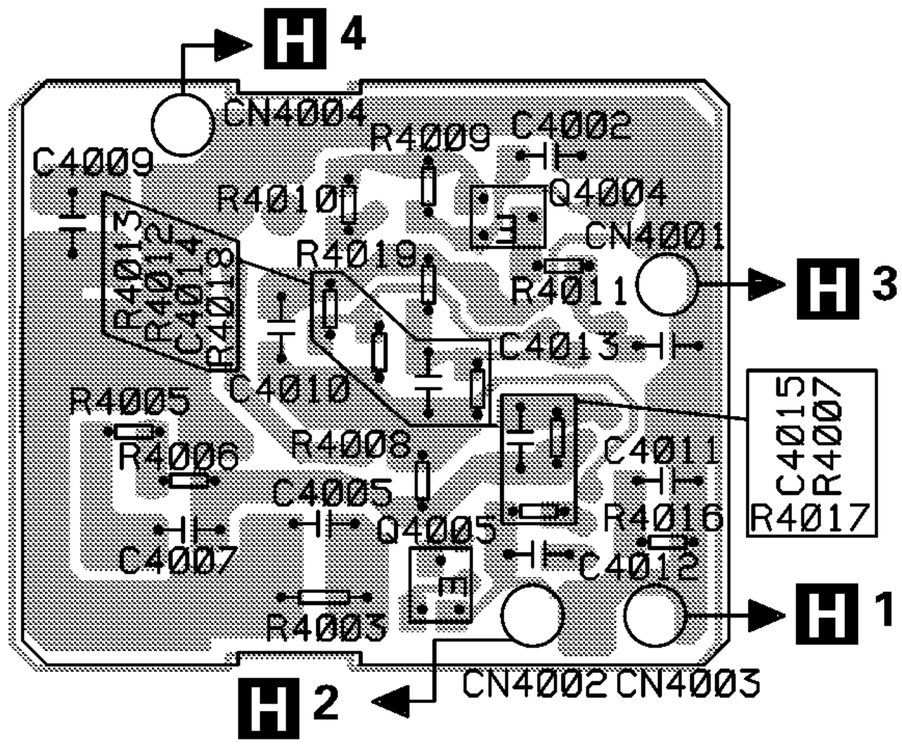


Fig. 26

5. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

  Chip Resistor

  RS1/○S○○○J,RS1/○○S○○○J

  Chip Capacitor (except for CQS.....)

  CKS....., CCS....., CSZS.....

B Unit Number : CWE1416
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	1	IC	PA4023B
IC	2	IC	PA4024A
Q	1	Transistor	2SC2412KLN
Q	2	Transistor	DTC124EU
Q	3	FET	3SK263
Q	31	Transistor	2SC2412KLN
Q	154	Transistor	DTC124EU
Q	165	Transistor	2SC2412KLN
Q	201	FET	2SK932
Q	202	Transistor	2SC2412KLN
Q	203	Transistor	DTC124EU
D	4	Diode	1SV250
D	5	Diode	KV1410-F1
D	6	Diode	MA157
D	7	Diode	KV1410-F1
D	8	Diode	KV1410-F1
D	201	Diode	MA157
D	202	Diode	MA157
D	231	Diode	SVC253
L	2	Coil	CTC1108
L	3	Inductor	LCTB2R2K2125
L	4	Coil	CTC1108
L	5	Coil	CTC1107
L	6	Inductor	LCTBR15K1608
L	51	Ferri-Inductor	LAU150K
L	201	Ferri-Inductor	LAU4R7K
L	202	Ferri-Inductor	LAU330K
L	203	Inductor	CTF1287
L	208	Inductor	LAU121K
L	231	Inductor	LCTA3R3J3225
T	31	Coil	CTE1116
T	51	Coil	CTC1136
TC	1		CCL1038
CF	51	Ceramic Filter	CTF1292
CF	52	Ceramic Filter	CTF1292
CF	53	Ceramic Filter	CTF1292
CF	232	Ceramic Filter	CTF1348
X	151	Resonator 920.5kHz	CSS1365
X	231	Crystal Resonator 10.26MHz	CSS1111
VR	154	Semi-fixed 150kΩ(B)	CCP1213
AR	1		DSP-201M

RESISTORS

=====Circuit Symbol and No.		===Part Name	Part No.
R	1		RS1/16S0R0J
R	4		RS1/16S154J
R	5		RS1/16S391J
R	6		RS1/16S223J
R	7		RS1/16S123J
R	8		RS1/16S332J
R	9		RS1/16S473J
R	10		RS1/16S223J
R	11		RS1/16S124J
R	13		RS1/16S563J
R	15		RS1/16S271J
R	16		RS1/16S104J
R	17		RS1/16S332J
R	18		RS1/16S332J
R	31		RS1/16S470J
R	32		RS1/16S822J
R	33		RS1/16S822J
R	34		RS1/16S331J
R	35		RS1/16S331J
R	51		RS1/16S271J
R	52		RS1/16S560J
R	55		RS1/16S102J
R	56		RS1/16S823J
R	61		RS1/16S392J
R	62		RS1/16S393J
R	101		RS1/16S272J
R	102		RS1/16S682J
R	103		RS1/16S333J
R	104		RS1/16S334J
R	105		RS1/16S683J
R	107		RS1/16S222J
R	151		RS1/16S222J
R	152		RS1/16S393J
R	154		RS1/16S104J
R	155		RS1/16S273J
R	156		RS1/16S243J
R	157		RS1/16S203J
R	160		RS1/16S222J
R	161		RS1/16S563J
R	162		RS1/16S105J
R	163		RS1/16S222J
R	202		RS1/16S223J
R	203		RS1/16S225J
R	204		RS1/16S103J
R	206		RS1/16S220J
R	207		RS1/16S101J
R	208		RS1/16S102J
R	209		RS1/16S471J
R	214		RS1/16S822J
R	215		RS1/16S822J
R	217		RS1/16S102J
R	231		RS1/16S272J
R	232		RS1/16S473J
R	237		RS1/16S103J
R	238		RS1/16S104J

Circuit Symbol and No.	Part Name	Part No.
R 239		RS1/16S104J
R 240		RS1/16S332J
R 241		RS1/16S202J
R 243		RS1/16S123J
R 244		RS1/16S103J
R 247		RS1/16S123J
CAPACITORS		
C 1		CCSQCH6R0D50
C 2		CCSRCK2R0C50
C 4		CCSRCH820J50
C 6		CCSRCH820J50
C 8		CKSRYB103K25
C 9		CKSQYB104K16
C 10		CCSRCKR50C50
C 11		CEJA1R0M50
C 12		CKSRYB222K50
C 13		CKSRYB222K50
C 14		CCSRCH220J50
C 16		CCSRCH8R0D50
C 17		CKSRYB222K50
C 18		CKSRYB103K25
C 19		CKSRYB222K50
C 20		CKSRYB222K50
C 21		CEJA100M16
C 22		CCSRTH9R0D50
C 23		CCSRTH120J50
C 24		CCSRCH471J50
C 25		CKSRYB103K25
C 31		CKSRYB103K25
C 32		CKSQYB472K50
C 33		CCSRCH5R0C50
C 34		CKSQYB104K16
C 36		CCSRRH201J50
C 51		CKSRYB223K25
C 52		CKSRYB103K25
C 54		CCSRCH470J50
C 55		CKSQYB223K25
C 56		CKSQYB104K16
C 57		CKSRYB472K50
C 58		CEJA330M10
C 59		CKSRYB103K25
C 61		CCSRCH270J50
C 62		CKSRYB103K25
C 63		CEJAR15M50
C 101		CEJANP100M10
C 102		CKSRYB182K50
C 103		CKSRYB682K25
C 104		CEJA2R2M50
C 105		CKSRYB103K25
C 106		CCSRCH151J50
C 107		CKSRYB103K25
C 151		CKSRYB472K50
C 152		CKSQYB104K16
C 153		CEJA3R3M50
C 154		CKSQYB104K16
C 157		CEJA3R3M50
C 158		CKSYB474K16
C 159		CEJA220M6R3
C 160		CKSQYB104K16
C 161		CKSQYB104K16
C 162		CEJA3R3M50
C 163		CKSRYB102K50
C 170		CCSRCH100D50
C 201		CCSRCH471J50
C 202		CCSRCH100D50
C 203		CKSRYB332K50
C 204		CKSQYB473K16
C 205		CKSQYB473K16
C 206		CKSQYB104K16
C 207		CCSRCH560J50
C 209		CKSQYB104K16
C 211		CCSRCH101J50
C 212		CEJA470M6R3
C 213		CKSRYB103K25
C 216		CCSRCH101J50
C 217		CEJA1R5M50
C 219		CCSRCH471J50
C 220		CKSRYB103K25
C 230		CKSRYB103K25
C 231		CCSRCH330J50
C 232		CCSRCH150J50
C 233		CKSQYB104K16
C 234		CEJA330M10
C 235		CKSRYB332K50
C 236		CKSQYB473K16
C 237		CCSRCH120J50
C 239		CKSRYB472K50
C 240		CEJAR47M50
C 241		CKSQYB104K16
C 242		CEJAR47M50
C 243		CEJAR33M50
C 244		CKSQYB473K16
C 245		CKSRYB123K25
C 246		CKSQYB473K16
C 250		CCSRCH471J50

A Unit Number : CWM5146
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC 101	IC		TA2050S
IC 102	IC		CA0008AM
IC 201	IC		PM0008BF
IC 253	IC		NJM4558MD
IC 302	IC		NJM4558MD
IC 303	IC		NJM4558MD
IC 304	IC		NJM4558MD
IC 305	IC		NJM4558MD
IC 306	IC		NJM4558MD
IC 307	IC		TC4051BF
IC 401	IC		PM2005B
IC 503	IC		NJM2903M
IC 504	IC		PMW001B
IC 601	IC		PD4771A
IC 971	IC		S-80730ANDT
Q 101	Chip Transistor		2SA1162
Q 102	Transistor		DTC124EK
Q 151	Transistor		2SD1757K
Q 152	Transistor		2SD1757K
Q 153	Transistor		IMH3A
Q 154	Transistor		DTA114EK
Q 351	Transistor		IMH3A
Q 352	Transistor		IMH3A
Q 353	Transistor		IMH3A
Q 354	Transistor		IMH3A
Q 355	Transistor		IMH3A
Q 356	Transistor		IMH3A
Q 361	Transistor		IMD2A
Q 362	Transistor		DTA124EK
Q 401	Transistor		2SC2712
Q 402	Transistor		2SC2712
Q 403	Transistor		DTC124EK
Q 404	Transistor		IMD2A
Q 501	Transistor		2SC2712
Q 601	Transistor		DTA114EK

Circuit Symbol and No.		Part Name	Part No.
Q	602	Transistor	DTC114EK
Q	651	Transistor	IMD2A
Q	652	Transistor	DTC143EK
Q	653	Transistor	DTC123EK
Q	654	Transistor	DTC123EK
Q	801	Transistor	2SC2712
Q	802	Transistor	IMD2A
Q	803	Transistor	2SD1760F5
Q	804	Transistor	DTC114EK
Q	805	Transistor	2SB1238
Q	806	Transistor	DTC143EK
Q	807	Transistor	2SC3295
Q	808	Chip Transistor	2SA1162
Q	911	Transistor	2SD1760F5
Q	921	Transistor	2SB1243
Q	931	Transistor	2SB1243
Q	932	Transistor	DTC124EK
Q	941	Transistor	2SD2396
Q	942	Transistor	IMD2A
Q	944	Transistor	2SC2712
Q	945	Transistor	2SC2712
Q	951	Transistor	DTC114EK
Q	952	Transistor	IMX1
Q	961	Chip Transistor	2SA1162
Q	971	Transistor	DTA144TK
Q	981	Transistor	2SA1674
Q	982	Transistor	2SA1674
Q	983	Transistor	IMH1A
Q	991	Transistor	IMD2A
Q	992	Transistor	2SD2396
D	301	Diode	MA110
D	302	Diode	MA110
D	303	Diode	MA110
D	304	Diode	MA110
D	305	Diode	MA110
D	306	Diode	MA110
D	307	Diode	MA110
D	308	Diode	MA110
D	309	Diode	MA110
D	310	Diode	MA110
D	351	Chip Diode	MA151WK
D	352	Chip Diode	MA151K
D	354	Diode	MA110
D	402	Chip Diode	MA151WK
D	403	Chip Diode	MA151WK
D	501	Diode	MA3047(M)
D	653	LED	BR4361F
D	654	Diode	MA3160(H)
D	655	Diode	MA3160(H)
D	656	Diode	MA3160(H)
D	801	Diode	DA204K
D	802	Diode	MA3047(M)
D	803	Diode	MA3082(L)
D	804	Diode	MA3062(M)
D	805	Diode	DA204K
D	806	Diode	DA204K
D	807	Diode	DA204K
D	808	Chip Diode	MA151WK
D	901	Diode	ERA15-02VH
D	911	Diode	ERA15-02VH
D	912	Diode	HZS6L(B1)
D	921	Diode	ERA15-02VH
D	922	Diode	ERA15-02VH
D	931	Diode	ERA15-02VH
D	932	Diode	ERA15-02VH

Circuit Symbol and No.		Part Name	Part No.
D	941	Diode	HZS9L(B3)
D	942	Diode	MA3082(L)
D	951	Diode	ERA15-02VH
D	952	Diode	HZS7L(C3)
D	953	Diode	HZS7L(A1)
D	961	Chip Diode	MA151WK
D	971	Chip Diode	MA151K
D	991	Diode	HZS9L(B1)
L	101	Inductor	LAU3R3K
L	402	Ferri-Inductor	LAU2R2K
L	403	Ferri-Inductor	LAU2R2K
L	501	Ferri-Inductor	LAU2R2K
L	602	Ferri-Inductor	LAU2R2K
L	603	Inductor	LAU100K
L	662	Ferri-Inductor	LAU220K
L	961	Ferri-Inductor	LAU2R2K
TH	601	Thermistor	CCX1031
X	401	Crystal Resonator 7.200MHz	CSS1379
X	501	Crystal Resonator 4.332MHz	CSS1056
X	601	Resonator 12.58291MHz	CSS1402
S	971	Switch(RESET)	CSG1046
IL	801	Lamp 14V 40mA	CEL1263
VR	501	Semi-fixed 22kΩ(B)	CCP1129
FU	801	0.4A	ICP-N10
		High Output Unit	CWX2135
		FM/AM Tuner Unit	CWE1416
BZ	601	Buzzer	CPV1011

RESISTORS

R	13		RS1/10S332J
R	14		RS1/10S332J
R	15		RS1/10S332J
R	16		RS1/10S332J
R	17		RS1/10S0R0J
R	18		RS1/10S0R0J
R	19		RS1/10S0R0J
R	20		RS1/10S0R0J
R	25		RS1/10S102J
R	26		RS1/10S473J
R	101		RS1/10S101J
R	102		RS1/10S101J
R	103		RS1/10S620J
R	104		RS1/10S222J
R	105		RS1/10S102J
R	106		RS1/10S102J
R	107		RS1/10S473J
R	108		RS1/10S473J
R	109		RS1/10S332J
R	110		RS1/10S562J
R	111		RS1/10S472J
R	112		RS1/10S103J
R	113		RS1/10S181J
R	114		RS1/10S223J
R	115		RS1/10S102J
R	116		RS1/10S102J
R	117		RS1/10S223J
R	118		RS1/10S181J
R	151		RS1/10S272J
R	152		RS1/10S272J
R	155		RS1/10S224J
R	156		RS1/10S224J
R	157		RS1/10S222J
R	158		RS1/10S222J
R	159		RS1/10S223J

=====Circuit Symbol and No.	===Part Name	Part No.
R	160	RS1/10S223J
R	201	RS1/10S102J
R	202	RS1/10S102J
R	203	RS1/10S332J
R	204	RS1/10S332J
R	205	RS1/10S472J
R	206	RS1/10S472J
R	207	RS1/10S123J
R	208	RS1/10S123J
R	209	RS1/10S102J
R	210	RS1/10S103J
R	211	RS1/10S272J
R	212	RS1/10S272J
R	213	RS1/10S151J
R	214	RS1/10S151J
R	215	RS1/10S101J
R	216	RS1/10S101J
R	217	RS1/10S472J
R	218	RA3C472J
R	257	RS1/10S0R0J
R	261	RS1/10S0R0J
R	290	RS1/10S0R0J
R	291	RS1/10S0R0J
R	293	RS1/10S0R0J
R	294	RS1/10S0R0J
R	303	RA3C102J
R	305	RS1/10S223J
R	306	RS1/10S223J
R	307	RS1/10S473J
R	308	RS1/10S123J
R	309	RS1/10S102J
R	310	RS1/10S102J
R	311	RS1/10S222J
R	312	RS1/10S473J
R	313	RS1/10S333J
R	314	RS1/10S132J
R	315	RS1/10S134J
R	316	RS1/10S225J
R	322	RS1/10S393J
R	323	RS1/10S162J
R	324	RS1/10S164J
R	325	RS1/10S225J
R	326	RS1/10S225J
R	327	RS1/10S273J
R	328	RS1/10S112J
R	329	RS1/10S114J
R	330	RS1/10S363J
R	331	RS1/10S152J
R	332	RS1/10S154J
R	333	RS1/10S225J
R	334	RS1/10S225J
R	335	RS1/10S433J
R	336	RS1/10S182J
R	337	RS1/10S184J
R	338	RS1/10S623J
R	339	RS1/10S272J
R	340	RS1/10S224J
R	341	RS1/10S225J
R	342	RS1/10S225J
R	343	RS1/10S1213F
R	344	RS1/10S512J
R	345	RS1/10S474J
R	347	RS1/10S122J
R	348	RS1/10S1213F
R	349	RS1/10S225J

=====Circuit Symbol and No.	===Part Name	Part No.
R	350	RS1/10S303J
R	355	RS1/10S332J
R	356	RS1/10S332J
R	359	RS1/10S332J
R	360	RS1/10S332J
R	363	RS1/10S332J
R	364	RS1/10S332J
R	371	RS1/10S332J
R	372	RS1/10S332J
R	401	RS1/10S472J
R	402	RS1/10S224J
R	403	RS1/10S103J
R	405	RS1/10S105J
R	407	RS1/10S562J
R	409	RS1/10S681J
R	410	RS1/10S682J
R	411	RS1/10S472J
R	412	RS1/10S222J
R	413	RS1/10S222J
R	414	RS1/10S102J
R	416	RS1/10S473J
R	417	RS1/10S0R0J
R	418	RS1/10S102J
R	419	RS1/10S682J
R	420	RS1/10S472J
R	421	RS1/10S561J
R	422	RS1/10S103J
R	423	RS1/10S222J
R	424	RS1/10S152J
R	425	RS1/10S392J
R	426	RS1/10S392J
R	427	RS1/10S272J
R	428	RS1/10S0R0J
R	429	RS1/10S222J
R	430	RS1/10S562J
R	433	RS1/10S472J
R	435	RS1/10S0R0J
R	436	RS1/10S473J
R	437	RS1/10S473J
R	501	RS1/10S562J
R	502	RS1/10S102J
R	503	RS1/10S103J
R	504	RD1/4PU151J
R	505	RS1/10S3322F
R	506	RS1/10S0R0J
R	507	RS1/10S102J
R	508	RA3C102J
R	511	RS1/10S102J
R	512	RS1/10S102J
R	513	RS1/10S222J
R	514	RS1/10S222J
R	515	RS1/10S684J
R	516	RS1/10S681J
R	517	RS1/10S562J
R	518	RS1/10S222J
R	519	RS1/10S105J
R	524	RS1/10S681J
R	530	RS1/10S0R0J
R	541	RS1/10S0R0J
R	601	RS1/10S102J
R	604	RS1/10S681J
R	605	RS1/10S473J
R	607	RS1/10S473J
R	608	RS1/10S473J
R	609	RS1/10S473J

=====Circuit Symbol and No.		===Part Name	Part No.
R	611		RA2CQ223J
R	612		RS1/10S473J
R	615		RS1/10S473J
R	616		RS1/10S393J
R	617		RS1/10S473J
R	618		RA3C681J
R	619		RS1/10S681J
R	620		RS1/10S681J
R	621		RA3C222J
R	622		RS1/10S473J
R	623		RN1/10SE2202D
R	624		RA3C473J
R	627		RS1/10S104J
R	628		RS1/10S104J
R	629		RS1/10S102J
R	630		RS1/10S102J
R	632		RS1/10S393J
R	637		RS1/10S473J
R	638		RS1/10S473J
R	639		RS1/10S473J
R	641		RS1/10S473J
R	653		RS1/8S102J
R	654		RS1/8S102J
R	655		RS1/8S102J
R	657		RS1/10S103J
R	658		RS1/10S473J
R	659		RS1/10S473J
R	660		RS1/10S473J
R	661		RS1/8S331J
R	662		RS1/10S223J
R	663		RS1/10S163J
R	664		RS1/10S103J
R	665		RS1/10S163J
R	801		RS1/10S103J
R	802		RS1/10S224J
R	803		RD1/4PU471J
R	804		RS2PMF100J
R	805		RS1/10S222J
R	806		RD1/4PU102J
R	807		RS1/10S104J
R	808		RS1/10S1R0J
R	809		RS1/10S472J
R	810		RS1/10S472J
R	811		RS1/10S104J
R	812		RS1/8S222J
R	813		RS1/8S222J
R	814		RS1/8S222J
R	818		RS1/10S224J
R	819		RS2PMF330J
R	912		RS1/10S332J
R	921		RS1/4S221J
R	922		RS1/10S472J
R	923		RS1/4S221J
R	931		RS1/4S221J
R	932		RS1/10S472J
R	933		RS1/4S221J
R	941		RS1/10S1R0J
R	942		RD1/4PU221J
R	943		RS1/8S681J
R	947		RS1/10S473J
R	948		RS1/10S103J
R	949		RS1/10S473J
R	950		RS1/10S224J
R	951		RS1/10S103J
R	954		RS1/10S103J

=====Circuit Symbol and No.		===Part Name	Part No.
R	955		RS1/10S473J
R	956		RS1/10S473J
R	957		RS1/10S103J
R	958		RS1/10S472J
R	961		RS1/8S153J
R	962		RS1/10S472J
R	963		RS1/10S472J
R	964		RS1/10S102J
R	971		RS1/10S822J
R	972		RS1/10S102J
R	974		RS1/10S471J
R	981		RS1/10S472J
R	982		RD1/4PU102J
R	983		RS1/10S472J
R	984		RD1/4PU102J
R	991		RD1/4PU221J
R	992		RS1/10S221J
R	993		RS1/10S222J
R	994		RS1/10S472J
R	995		RS1/10S681J
R	996		RA3C102J

CAPACITORS

C	101		CKSQYB104K50
C	102		CKSQYB104K50
C	103		CKSQYB102K50
C	104		CEJA100M16
C	105		CEJA1R0M50
C	106		CEJA1R0M50
C	107		CEJA100M16
C	108		CEJA1R0M50
C	109		CEJA1R0M50
C	151		CKSQYB223K25
C	152		CKSQYB223K25
C	153		CEJA1R0M50
C	154		CEJA1R0M50
C	177	3300µF/16V	CCH1150
C	178		CKSQYB104K50
C	201		CEJA1R0M50
C	202		CEJA1R0M50
C	203		CEJA1R0M50
C	204		CEJA1R0M50
C	205		CEJA1R0M50
C	206		CEJA1R0M50
C	207		CEJA470M10
C	208		CKSQYB104K50
C	209		CEJA100M16
C	211		CKSQYB822K50
C	212		CKSQYB822K50
C	213		CEJA1R0M50
C	214		CEJA1R0M50
C	215		CKSQYB152K50
C	216		CKSQYB152K50
C	217		CEJANP100M10
C	218		CEJANP100M10
C	219		CKSQYB183K25
C	220		CKSQYB183K25
C	221		CEJANP100M10
C	222		CEJANP100M10
C	223		CKSYB334K16
C	224		CKSYB334K16
C	225		CKSQYB103K50
C	226		CKSQYB103K50

=====Circuit Symbol and No.		===Part Name	Part No.
C	227		CKSYB105K16
C	228		CKSYB105K16
C	229		CKSQYB823K25
C	230		CKSQYB823K25
C	233		CKSQYB104K50
C	234		CKSQYB473K16
C	235		CKSQYB562K50
C	236		CKSQYB104K50
C	237		CKSQYB473K16
C	238		CCSQCH470J50
C	301		CEJA100M16
C	309		CKSQYB102K50
C	310		CEJA100M16
C	311		CEJA470M10
C	312		CKSQYB103K50
C	314		CKSQYB152K50
C	315		CKSQYB152K50
C	316		CKSQYB104K50
C	317		CKSQYB332K50
C	318		CKSQYB332K50
C	319		CKSQYB104K50
C	320		CKSQYB104K50
C	321		CKSQYB123K25
C	322		CKSQYB123K25
C	323		CKSQYB223K25
C	324		CKSQYB223K25
C	325		CKSQYB104K50
C	326		CKSQYB104K50
C	327		CKSQYB473K16
C	328		CKSQYB473K16
C	329		CKSQYB823K25
C	330		CKSQYB823K25
C	331		CKSQYB104K50
C	332		CKSQYB104K50
C	333		CKSQYB823K25
C	334		CKSQYB823K25
C	335		CKSQYB821K50
C	336		CKSQYB821K50
C	337		CKSQYB104K50
C	353		CEJA100M16
C	354		CEJA100M16
C	373		CEJA4R7M35
C	374		CEJA4R7M35
C	375		CEJA4R7M35
C	376		CEJA4R7M35
C	401		CKSQYB103K50
C	402		CKSQYB223K25
C	403		CKSQYB103K50
C	405		CEJA220M10
C	406		CKSQYB103K50
C	407		CKSQYB471K50
C	408		CCSQCH101J50
C	409		CKSQYB223K25
C	410		CKSQYB103K50
C	411		CKSQYB472K50
C	412		CKSQYB103K50
C	413		CKSQYB103K50
C	414		CEJA220M10
C	415		CKSQYB103K50
C	416		CEJA220M6R3
C	417		CKSQYB103K50
C	418		CKSQYB103K50
C	419	4.7µF/16V	CCH1250
C	420		CKSQYB103K50
C	421		CKLSR473K16

=====Circuit Symbol and No.		===Part Name	Part No.
C	422		CKSQYB332K50
C	423		CKSQYB103K50
C	424	4.7µF/16V	CCH1250
C	425		CKSQYB103K50
C	427		CEJAR47M50
C	428		CKSQYB103K50
C	429		CCSQCH150J50
C	430		CCSQCH150J50
C	431		CKSQYB103K50
C	432		CKSQYB103K50
C	433		CCSQCH101J50
C	434		CKSQYB103K50
C	435		CKSQYB223K25
C	436		CKSQYB103K50
C	437		CKSQYB102K50
C	438		CEJA220M6R3
C	440		CKSQYB223K25
C	501		CKSQYB104K50
C	502		CKSQYB223K25
C	503		CKSQYB223K25
C	504		CCSQCH101J50
C	505		CEJA100M16
C	506		CKSQYB104K50
C	507		CKSQYB222K50
C	508		CKSQYB104K50
C	509		CKSYB105K16
C	510		CKSQYB104K50
C	511		CKSQYB472K50
C	512		CKSQYB103K50
C	513		CKSQYB102K50
C	514		CCSQCH270J50
C	515		CCSQCH270J50
C	517		CCSQCH101J50
C	601		CCSQCH180J50
C	602		CCSQCH180J50
C	603		CEJA101M10
C	604		CCSQCH101J50
C	606		CCSQCH101J50
C	607		CKSQYB102K50
C	608		CCSQCH101J50
C	610		CCSQCH101J50
C	653		CKSQYB103K50
C	654		CKSQYB103K50
C	655		CKSQYB103K50
C	801		CKSQYB103K50
C	802	220µF/10V	CCH1014
C	803		CCSQCH101J50
C	804		CCSQCH101J50
C	805	220µF/10V	CCH1014
C	806		CCSQCH101J50
C	912		CKSQYB472K50
C	913		CEJA470M10
C	941		CEEA331M10
C	942		CKSQYB103K50
C	943		CEJA101M16
C	951		CKSYF105Z25
C	971	0.22F/5.5V	CCL1037
C	972		CEJA2R2M50
C	991		CKSQYB473K16
C	992		CKSQYB102K50
C	993		CEJA101M10

E Unit Number : CWX2121
Unit Name : Control Unit

MISCELLANEOUS

IC	101	IC	UPC2572GS
IC	201	IC	UPD63702AGF
IC	251	IC	PD0236AM
IC	252	IC	PE2001AF
IC	301	IC	XLA6997FM
IC	302	IC	BA6285FP
IC	701	IC	PQ05TZ51
Q	101	Transistor	2SD1664
Q	102	Transistor	UMD2N
D	701	Diode	1SR154-400
D	702	Diode	1SR154-400
D	801		CL200IRX
D	802		CL200IRX
X	201	Crystal Resonator	CSS1067
S	801	Switch	CSN1028
S	802	Switch	CSN1028

RESISTORS

R	101		RS1/8S100J
R	102		RS1/8S120J
R	103		RS1/16S102J
R	104		RS1/16S822J
R	105		RS1/16S682J
R	106		RS1/16S183J
R	107		RS1/16S822J
R	108		RS1/16S333J
R	109		RS1/16S683J
R	110		RS1/16S134J
R	111		RS1/16S273J
R	112		RS1/16S222J
R	113		RS1/16S103J
R	114		RS1/16S103J
R	115		RS1/16S102J
R	116		RS1/16S163J
R	117		RS1/16S163J
R	201		RS1/16S104J
R	202		RS1/16S473J
R	304		RS1/16S0R0J
R	505		RS1/16S102J
R	507		RA3C102J
R	508		RA4C681J
R	551		RS1/16S102J
R	601		RS1/10S101J
R	602		RS1/10S101J
R	603		RS1/16S223J
R	604		RS1/16S223J
R	801		RS1/8S751J
R	802		RS1/8S751J

CAPACITORS

C	101		CEV101M6R3
C	102		CKSQYB104K16
C	103		CEV470M6R3
C	104		CKSYB334K16
C	105		CCSRCH330J50
C	106		CKSRYB103K25
C	107		CEV4R7M35
C	108		CKSQYB273K50
C	109		CCSRCH101J50
C	110		CKSQYB104K16
C	111		CKSRYB332K50
C	112		CKSQYB473K16
C	113		CKSRYB103K25
C	114		CKSRYB391K50
C	115		CCSRCH121J50
C	116		CKSRYB682K25
C	117		CKSRYB333K16
C	118		CKSYB334K16
C	119		CKSYB334K16
C	120		CKSYB334K16
C	121		CKSYB334K16
C	122		CKSQYB104K16
C	123		CKSRYB472K50
C	124		CKSQYB104K16
C	125		CCSRCH6R0D50
C	126		CKSRYB153K25
C	127		CCSRCH102J25
C	201		CKSYB334K16
C	202		CKSQYB104K16
C	203		CKSQYB104K16
C	204		CCSRCH9R0D50
C	205		CCSRCH9R0D50
C	206		CKSQYB104K16
C	251		CKSQYB104K16
C	252		CKSQYB104K16
C	253		CKSQYB104K16
C	254		CEV100M16
C	255		CKSQYB104K16
C	256		CEV470M6R3
C	257		CKSQYB104K16
C	303		CEV470M16
C	304		CKSRYB103K25
C	305		CKSRYB103K25
C	306		CKSRYB103K25
C	307		CEV100M25
C	502		CKSRYB471K50
C	601		CEV101M6R3
C	602		CKSQYB104K16
C	603		CEV4R7M35
C	604		CEV4R7M35
C	605		CKSRYB272K50
C	606		CKSRYB272K50
C	701	22µF/6.3V	CCH1233
C	702		CKSYB334K16
C	703		CEV101M6R3
C	901		CCSRCH471J50
C	902		CCSRCH271J50
C	903		CCSRCH471J50
C	904		CCSRCH101J50

Keyboard Unit
Consists of
Keyboard PCB
Switch PCB

C F Unit Number : CWM5062
Unit Name : Keyboard Unit

MISCELLANEOUS

IC	1901	HIC	RS-140
IC	1902	IC	PD6199A
IC	1903	IC	PD6200A
IC	1904	IC	SC14SU69F
Q	1901	Transistor	2SC2712
Q	1902	Transistor	IMH10A
Q	1903	Transistor	DTC143TK
Q	1904	Transistor	IMH10A
Q	1905	Transistor	IMH10A
Q	1906	Transistor	IMH10A

=====Circuit Symbol and No.		===Part Name	Part No.
Q	1907	Transistor	IMH10A
D	1901	Diode	MA153
D	1902	Diode	MA153
D	1903	LED	CL155DPGD
D	1904	LED	CL155DPGD
D	1905	LED	CL170DCD
D	1906	LED	CL170DCD
D	1907	LED	CL170PGCD
D	1909	LED	CL170DCD
D	1910	LED	CL170DCD
D	1911	LED	CL170DCD
D	1912	LED	CL170DCD
D	1913	LED	CL170DCD
D	1914	LED	CL170DCD
D	1915	LED	CL170DCD
D	1916	LED	CL170DCD
D	1917	LED	CL170DCD
D	1918	LED	CL170DCD
D	1919	LED	CL170DCD
L	1901	Inductor	LCTB2R2K2125
L	1902	Inductor	LCTB2R2K2125
X	1901	Resonator 5.0000MHz	CSS1405
S	1901	Switch	CSG1043
S	1902	Push Switch	CSG1099
S	1903	Push Switch	CSG1085
S	1904	Push Switch	CSG1099
S	1905	Push Switch	CSG1099
S	1906	Switch	CSG1043
S	1908	Push Switch	CSG1099
S	1910	Push Switch	CSG1085
S	1911	Push Switch	CSG1099
S	1912	Push Switch	CSG1078
S	1913	Push Switch	CSG1084
S	1914	Push Switch	CSG1085
S	1915	Push Switch	CSG1084
S	1917	Push Switch	CSG1085
S	1918	Push Switch	CSG1084
S	1919	Push Switch	CSG1085
S	1920	Push Switch	CSG1084
S	1921	Push Switch	CSG1085
S	1922	Push Switch	CSG1085
S	1923	Push Switch	CSG1085
S	1924	Push Switch	CSG1084
S	1930	Switch	CSN1027
LCD	1901	LCD	CAW1403
		EL	CEL1493

RESISTORS

R	1901		RS1/8S222J
R	1902		RS1/8S222J
R	1903		RS1/10S272J
R	1904		RS1/10S121J
R	1905		RS1/10S102J
R	1906		RS1/10S103J
R	1907		RS1/10S470J
R	1908		RS1/10S470J
R	1909		RS1/10S470J
R	1910		RS1/10S470J
R	1911		RS1/4S561J
R	1912		RS1/4S561J
R	1913		RS1/10S151J
R	1915		RS1/8S271J
R	1917		RS1/8S271J
R	1919		RS1/10S151J
R	1921		RS1/10S151J
R	1923		RS1/10S151J
R	1925		RS1/10S151J
R	1927		RS1/8S271J

=====Circuit Symbol and No.		===Part Name	Part No.
R	1929		RS1/8S151J
R	1931		RS1/10S102J
R	1936		RS1/10S103J
R	1941		RS1/10S470J
R	1942		RS1/10S470J

CAPACITORS

C	1901		CSZS100M6R3
C	1902		CSZS100M6R3
C	1903		CKSQYB103K50
C	1904		CKSQYB103K50
C	1905		CKSQYB103K50
C	1906		CKSQYB103K50
C	1907		CKSQYB103K50
C	1908		CKSQYB103K50
C	1909		CKSQYB103K50
C	1910		CKSQYB103K50
C	1911		CKSQYB103K50
C	1912		CCSQCH220J50
C	1913		CCSQCH220J50

G Unit Number : CWM4538
Unit Name : DC/DC Converter Unit

MISCELLANEOUS

IC	4001	IC	TL1451ANS
Q	4001	Transistor	2SA1797
Q	4002	Transistor	2SC2812
Q	4003	Transistor	2SA1179
Q	4004	Transistor	2SA1576
Q	4005	Transistor	DTC124EU
D	4001	Diode	SC802-06
L	4001		CTH1164
L	4002		CTH1164
L	4003		CTH1164

RESISTORS

R	4001		RS1/10S122J
R	4002		RS1/10S473J
R	4003		RS1/4S681J
R	4004		RS1/10S101J
R	4005		RN1/10SE3302D
R	4006		RN1/10SE1202D
R	4007		RS1/10S104J
R	4008		RN1/10SE6201D
R	4009		RS1/10S223J
R	4010		RS1/10S223J
R	4011		RS1/10S101J
R	4012		RN1/10SE1002D
R	4013		RN1/10SE1002D
R	4016		RS1/10S754J
R	4017		RN1/10SE9101D
R	4018		RN1/10SE1502D
R	4019		RN1/10SE3002D

CAPACITORS

C	4001	33µF/25V	CCH1249
C	4002		CKSQYB102K50
C	4003	33µF/25V	CCH1249
C	4004		CCSQCH101J50
C	4005		CKSQYB102K50
C	4006	33µF/25V	CCH1249
C	4008	33µF/25V	CCH1249
C	4009		CKSQYB102K50
C	4010		CKSQYB102K50
C	4011		CKSQYF105Z16

=====Circuit Symbol and No.	===Part Name	Part No.
C 4012		CCSQCH221J50
C 4013		CKSQYB104K25
C 4014		CKSQYB102K50

H Unit Number : CWX2135
Unit Name : High Output Unit

MISCELLANEOUS

IC 4151	IC	NJM2082M
IC 4251	IC	NJM2114M
IC 4351	IC	NJM2114M
Q 4051	Transistor	DTA143EK
Q 4052	Transistor	DTC114EK
Q 4053	Transistor	IMD2A
Q 4151	Transistor	2SD2114K
Q 4152	Transistor	2SD2114K
Q 4251	Transistor	2SD2114K
Q 4252	Transistor	2SD2114K
Q 4351	Transistor	2SD2114K
Q 4352	Transistor	2SD2114K

RESISTORS

R 4051	RD1/2PM271J
R 4052	RS1/8S122J
R 4053	RS1/10S103J
R 4151	RS1/10S473J
R 4152	RS1/16S473J
R 4153	RS1/16S103J
R 4154	RS1/16S103J
R 4155	RS1/10S153J
R 4156	RS1/16S153J
R 4157	RS1/10S820J
R 4158	RS1/16S820J
R 4159	RS1/10S223J
R 4160	RS1/10S223J
R 4161	RS1/16S222J
R 4162	RS1/16S222J
R 4251	RS1/16S473J
R 4252	RS1/16S473J
R 4253	RS1/16S103J
R 4254	RS1/10S103J
R 4255	RS1/16S153J
R 4256	RS1/10S153J
R 4257	RS1/10S820J
R 4258	RS1/10S820J
R 4259	RS1/10S223J
R 4260	RS1/10S223J
R 4261	RS1/16S222J
R 4262	RS1/16S222J
R 4351	RS1/10S473J
R 4352	RS1/10S473J
R 4353	RS1/16S103J
R 4354	RS1/16S103J
R 4355	RS1/16S153J
R 4356	RS1/16S153J
R 4357	RS1/10S820J
R 4358	RS1/10S820J
R 4359	RS1/10S223J
R 4360	RS1/10S223J
R 4361	RS1/16S222J
R 4362	RS1/16S222J

CAPACITORS

C 4051	CEJA101M16
C 4053	CSZSC100M16
C 4054	CKSQYB471K50
C 4153	CEWAR100M16
C 4154	CEWAS100M16

=====Circuit Symbol and No.	===Part Name	Part No.
C 4157		CKSQYB823K25
C 4158		CKSQYB823K25
C 4253		CEWAS100M16
C 4254		CEWAR100M16
C 4257		CCSQCH820J50
C 4258		CCSQCH820J50
C 4353		CEWAS100M16
C 4354		CEWAS100M16
C 4357		CCSQCH820J50
C 4358		CCSQCH820J50

D Unit Number:
Unit Name : Detector PCB

Q	1	Photo-transistor	CPT-230S-X
Q	2	Photo-transistor	CPT-230S-X

Miscellaneous Parts List

		Pickup Unit(SERVICE)	CXX1230
M	1	Motor Unit(SPINDLE)	CXA8912
M	2	CRG Motor Unit(CARRIAGE)	CXA8986
M	3	Load Motor Unit(LOADING)	CXA8702

6. ADJUSTMENT

6.1 TUNER ADJUSTMENT

● Connection Diagram

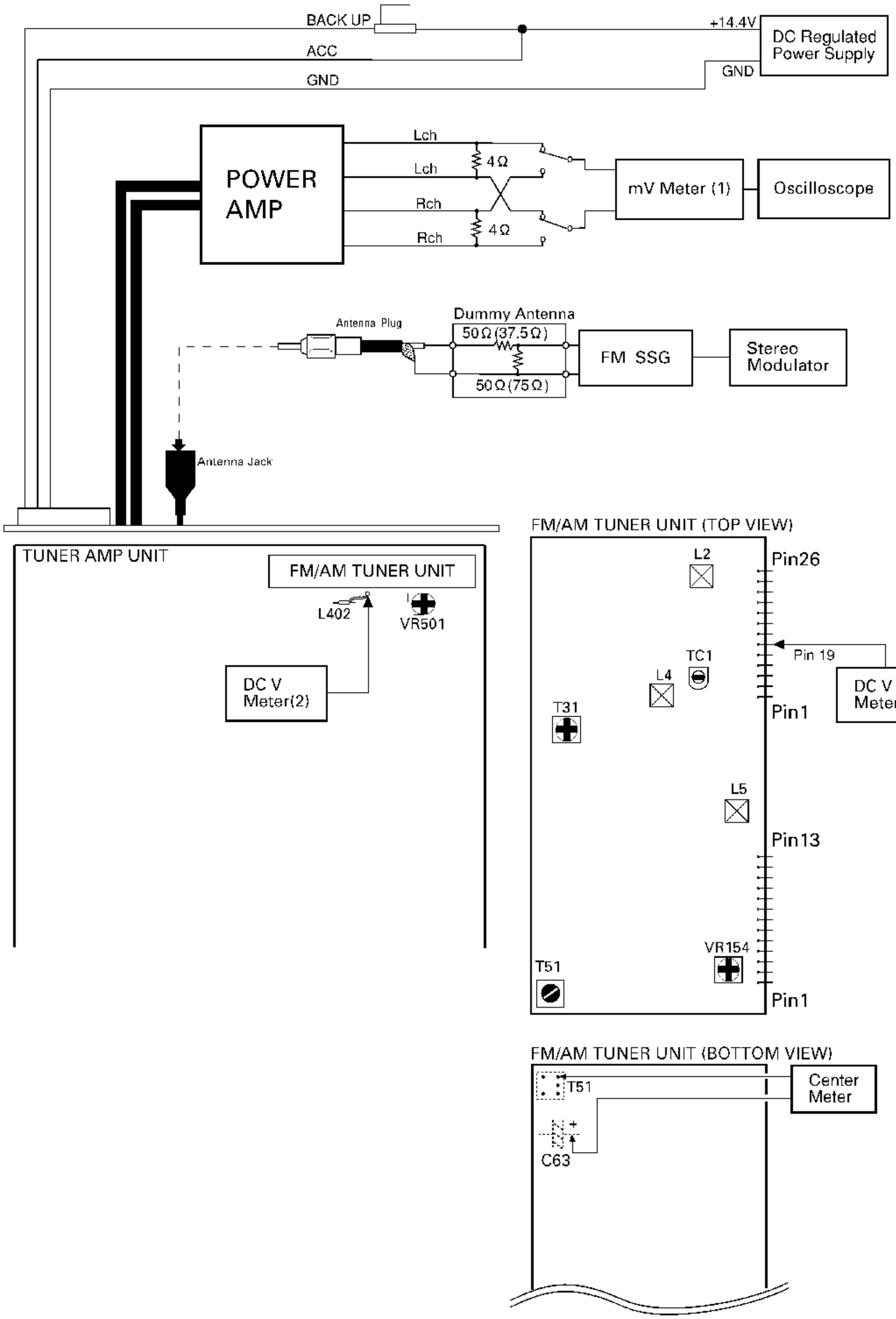


Fig. 27

FM ADJUSTMENT

Modulation M:MONO MOD., 400Hz 30%(22.5kHz Dev.)
S1:STEREO MOD., 1kHz, L or R=30%(20.25kHz+7.5kHz Dev.)
S2:STEREO MOD., 1kHz, L or R=60%(40.50kHz+7.5kHz Dev.)

NOTE:Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
TUN Volt	1	•••••	•••••	108.0	L5	DC V Meter(1) : 6V
IF	1	98.1 M	60	98.1	T51	Center Meter : 0
ANT Coil	1	98.1 M	5	98.1	L2	mV Meter(1) : Maximum
RF Coil	1	98.1 M	5	98.1	L4	mV Meter(1) : Maximum
Image	1	129.3 M	60—80	107.9	TC1	mV Meter(1) : Minimum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum (STEREO MODE)
ARC	1	98.1 S1	39	98.1	VR154	mV Meter(1) : Separation 5dB (STEREO MODE)

RDS SL ADJUSTMENT

	No.	FM SSG		Displayed	Adjustment	Adjustment Method
		Frequency(MHz)	Level(dBf)	Frequency(MHz)	Point	(Switch Position)
	1	104.0 S2	35	104.0	VR501	DC V Meter(2) : 1.75V±0.05V

6.2 CHECKING THE GRATING

● Checking the Grating After Changing the Service Pickup Unit

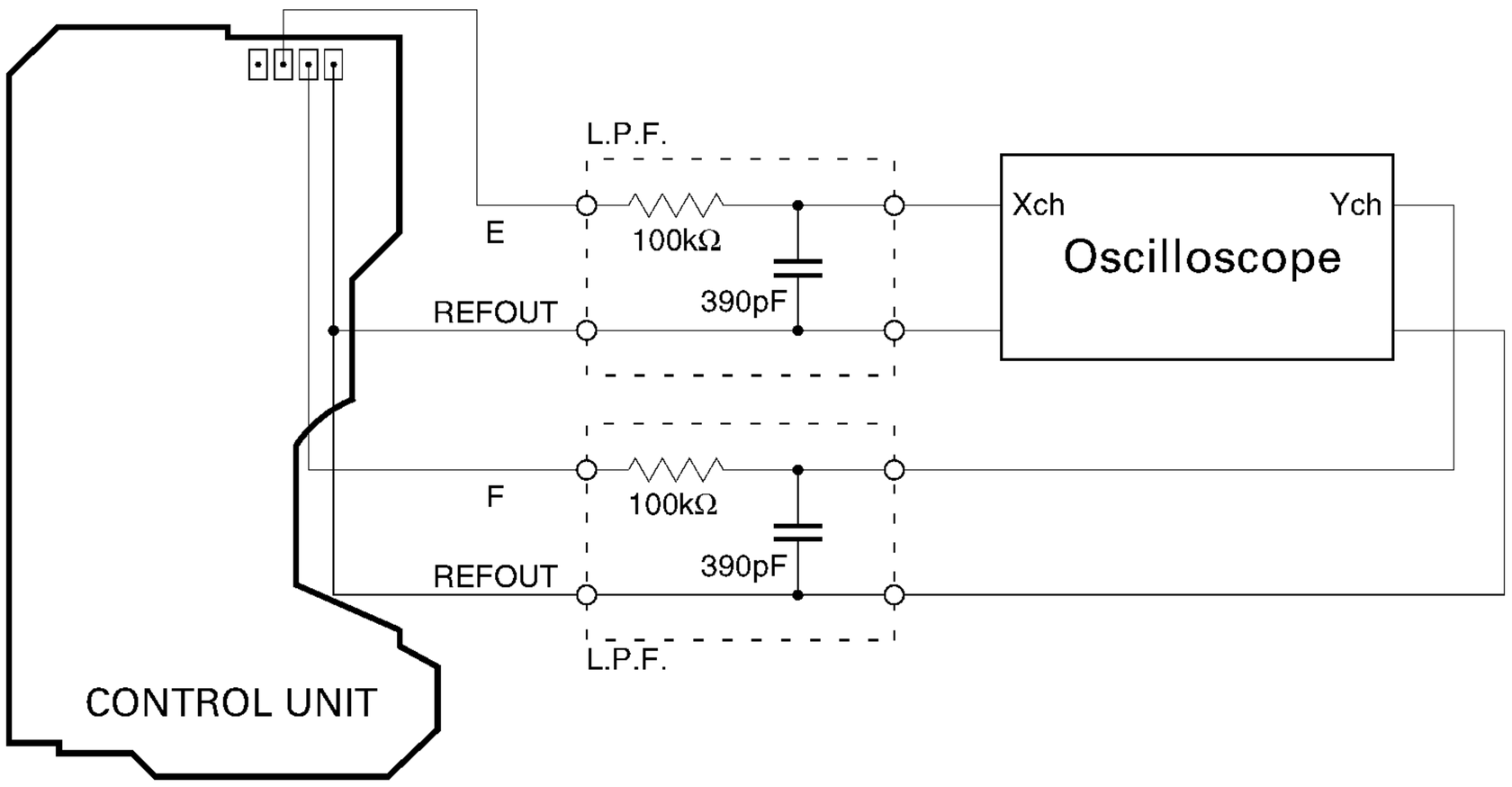
· **Note :**
Unlike previous CD mechanism modules the grating angle of the Pickup unit cannot be adjusted after the Pickup unit is changed. The Pickup unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted Pickup unit for the CD mechanism module. Changing the Pickup unit is thus best considered as a last resort. However, if the Pickup unit must be changed, the grating should be checked using the procedure below.

· **Purpose :**
To check that the grating is within an acceptable range.

· **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

· **Method :**

· Measuring Equipment	· Oscilloscope, Two L.P.F.
· Measuring Points	· E, F, REFOUT
· Disc	· ABEX TCD-784
· Mode	· TEST MODE



· **Checking Procedure**
1. In test mode, load the disc and switch the 5V regulator on.
2. Using the → and ← buttons, move the Pickup unit to the innermost track.
3. Press key **3** to close focus, the display should read "91". Press key **2** to implement the tracking balance adjustment the display should now read "81". Press key **3** 4 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the Pickup unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

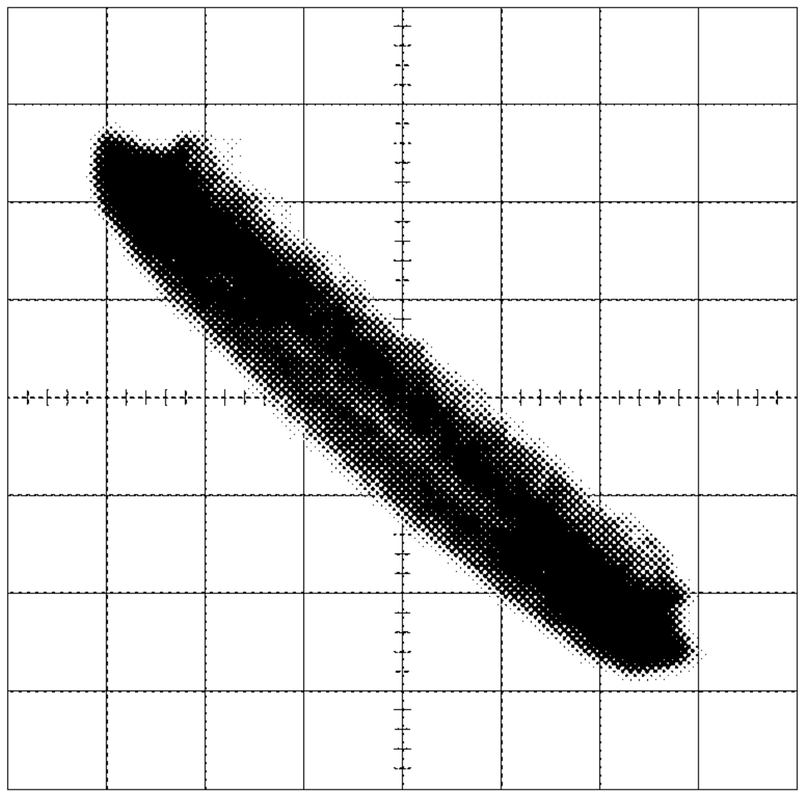
· **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

· **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

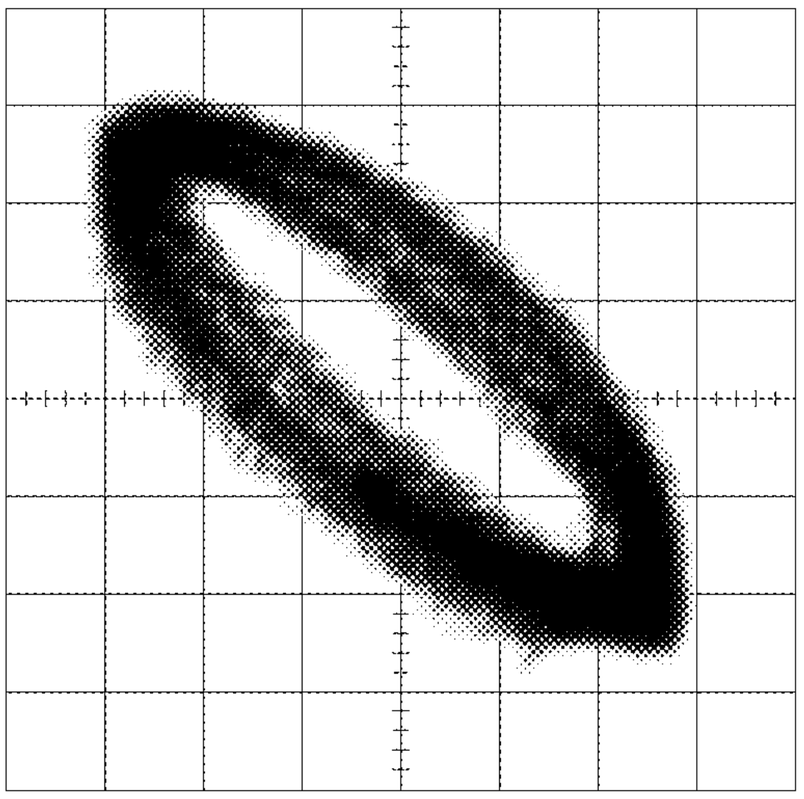
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

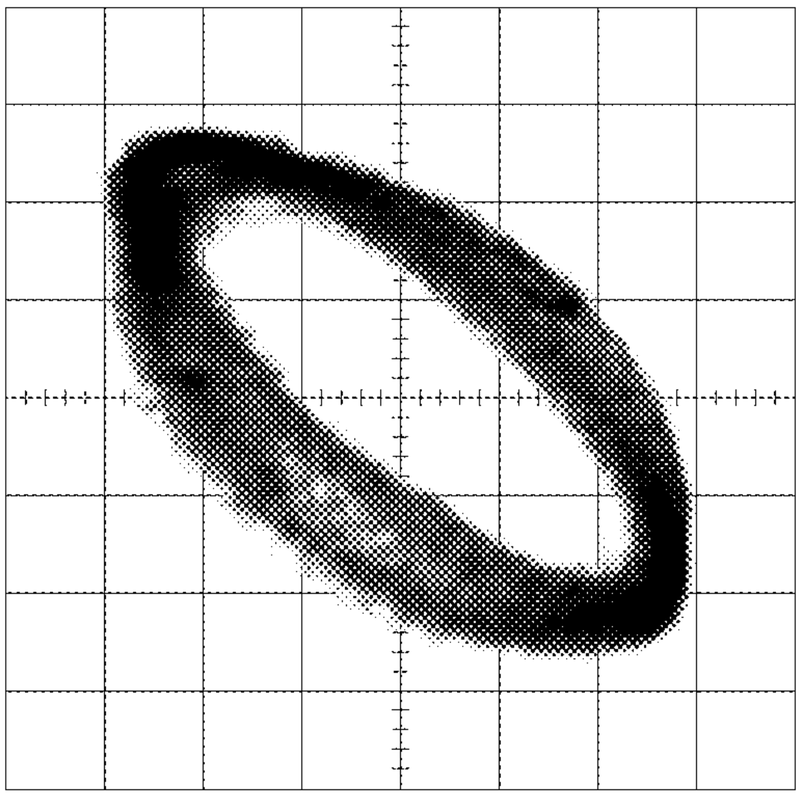
0°



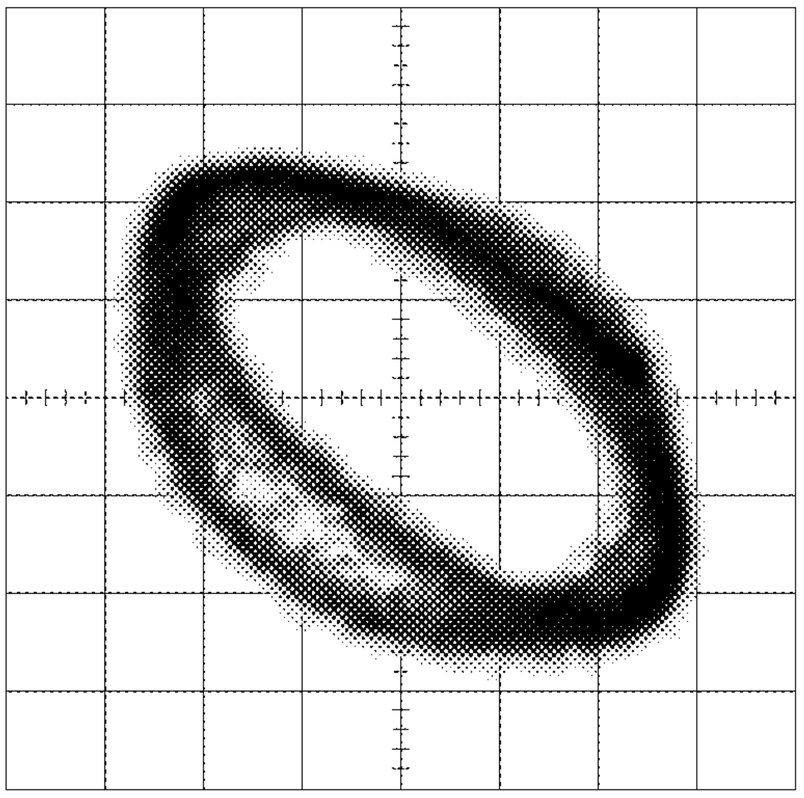
30°



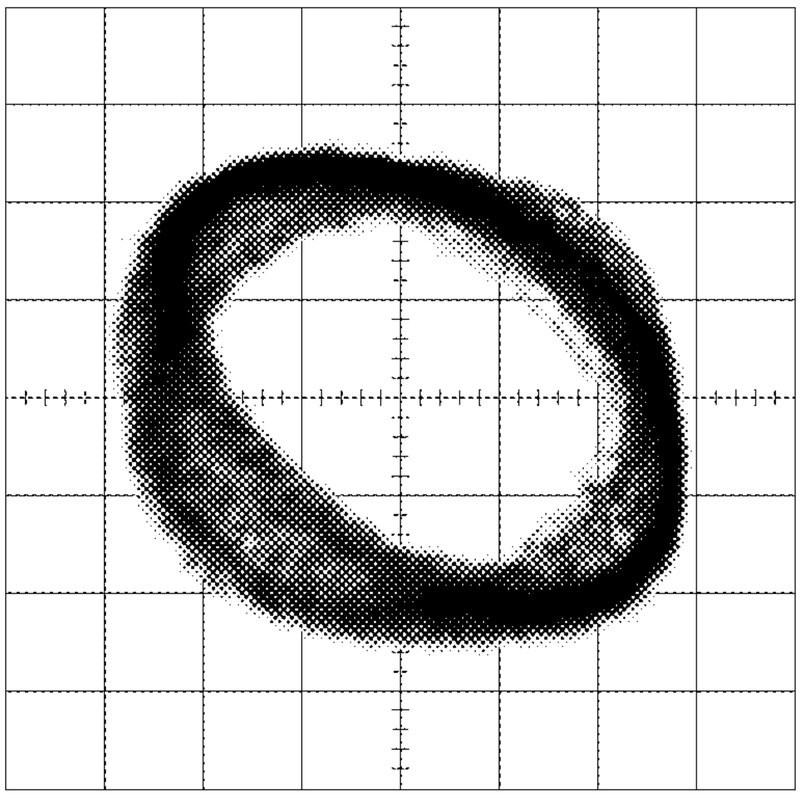
45°



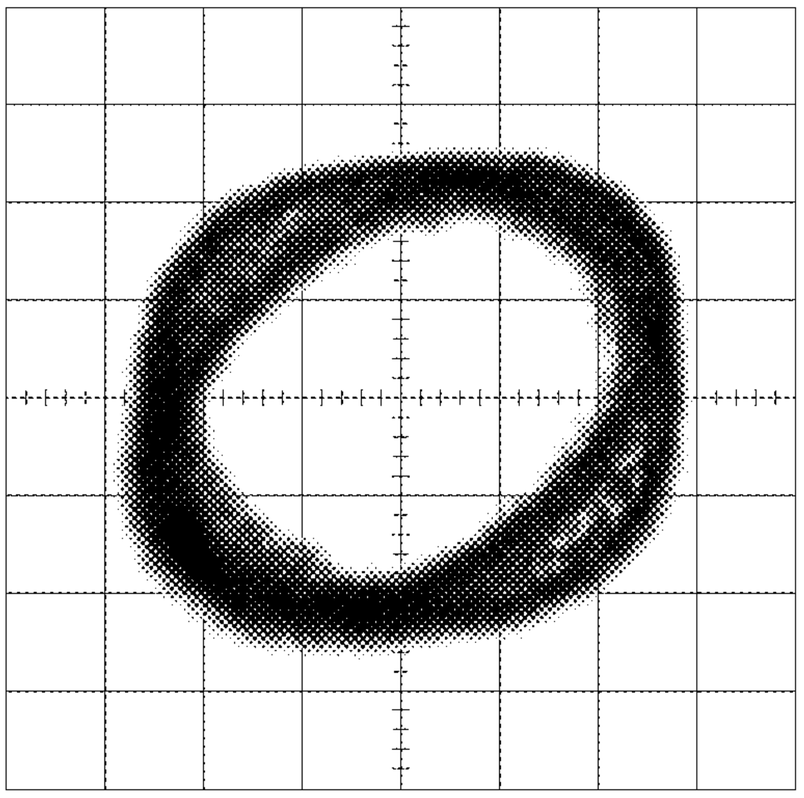
60°



75°



90°

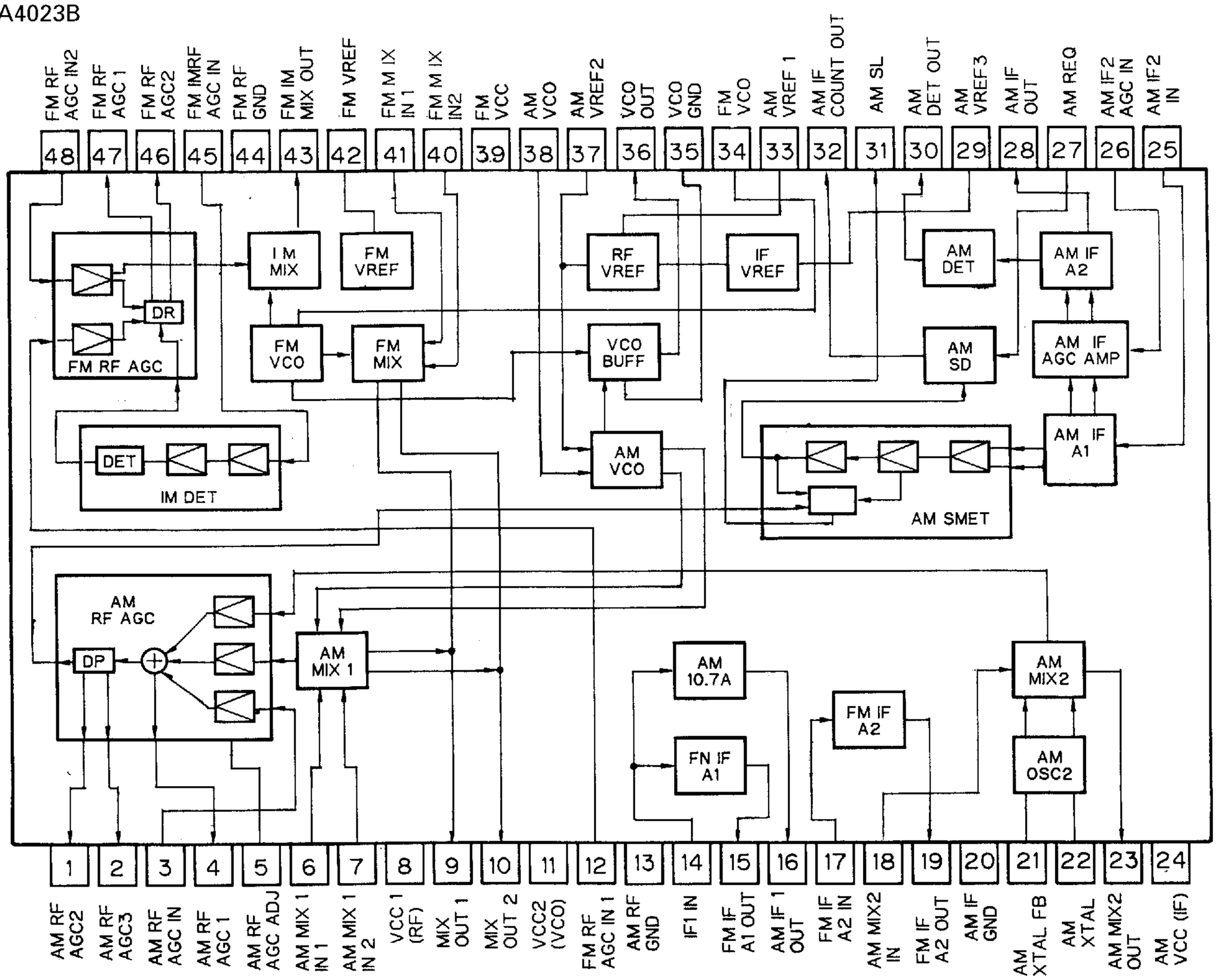


7. GENERAL INFORMATION

7.1 PARTS

7.1.1 IC

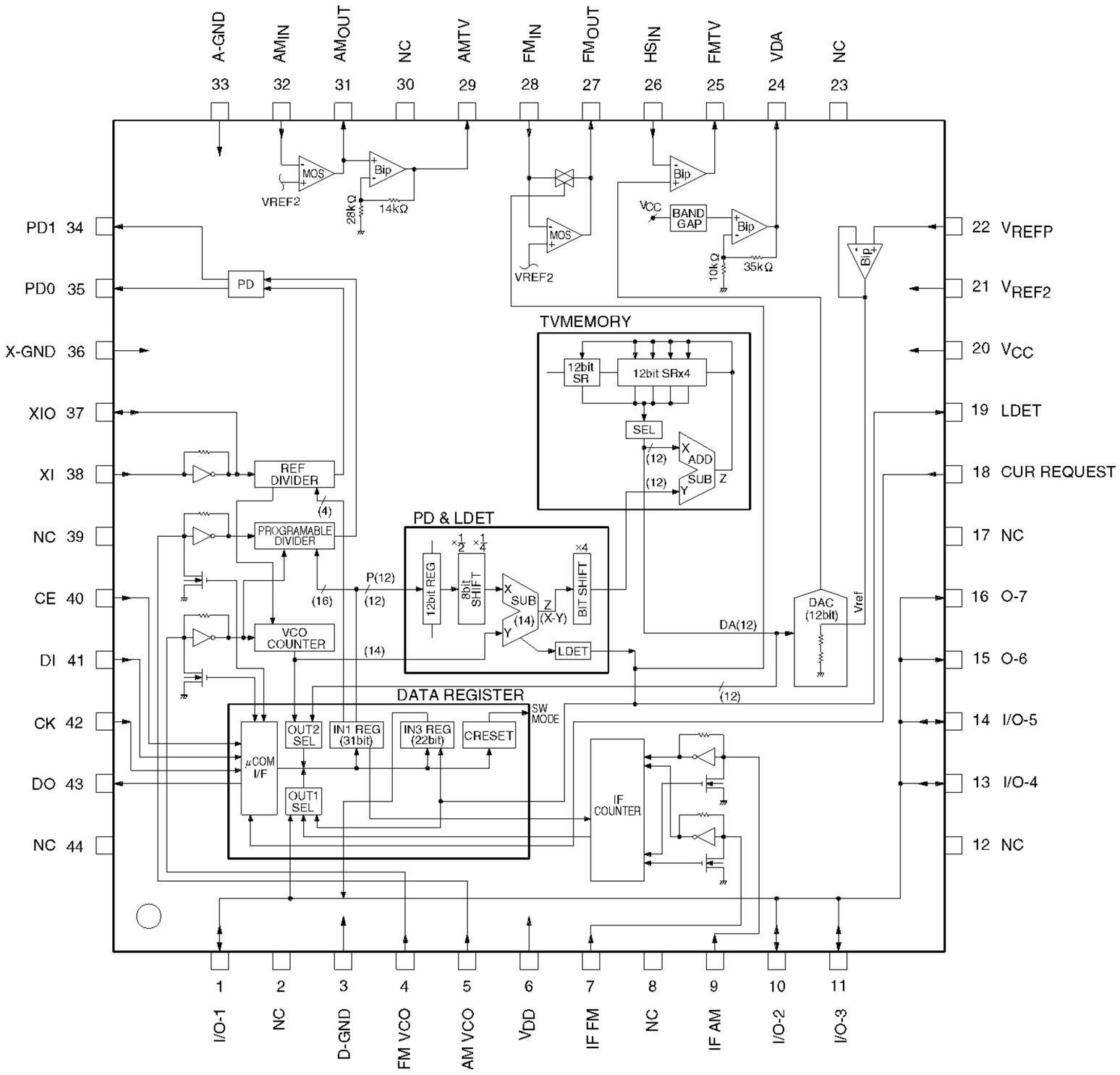
PA4023B



NJM2082M, NJM2114M

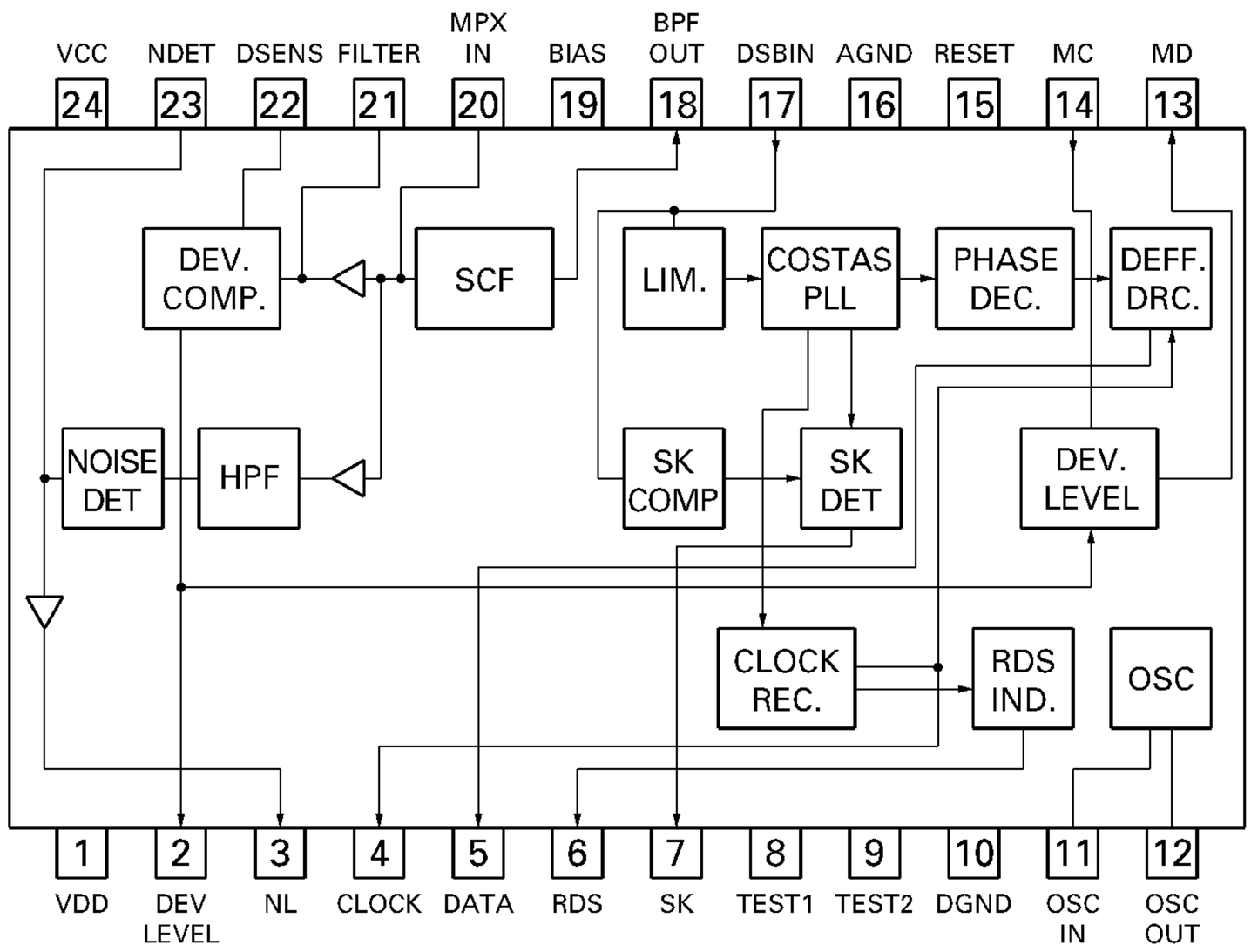
PM0008BF

PM2005B

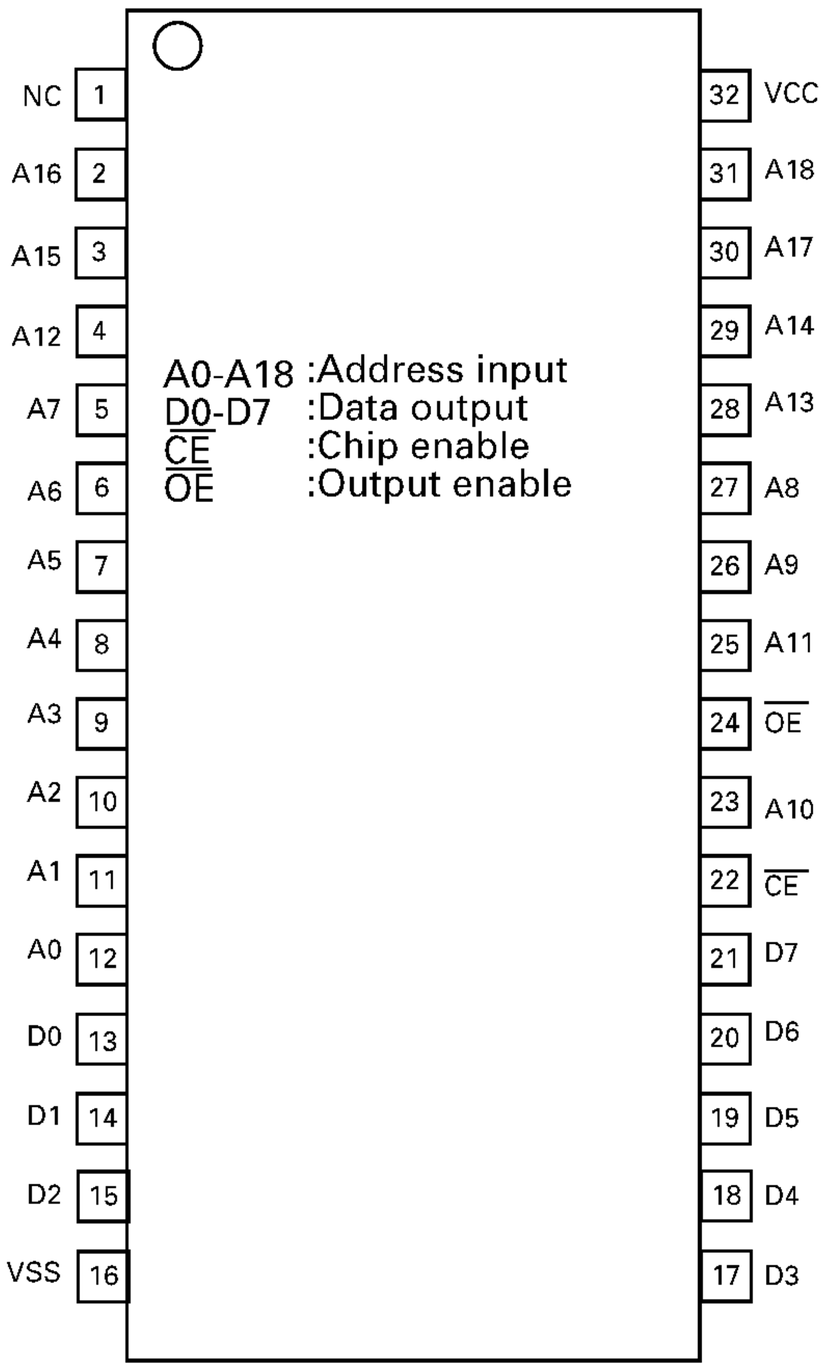


IC's marked by are MOS type.*
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

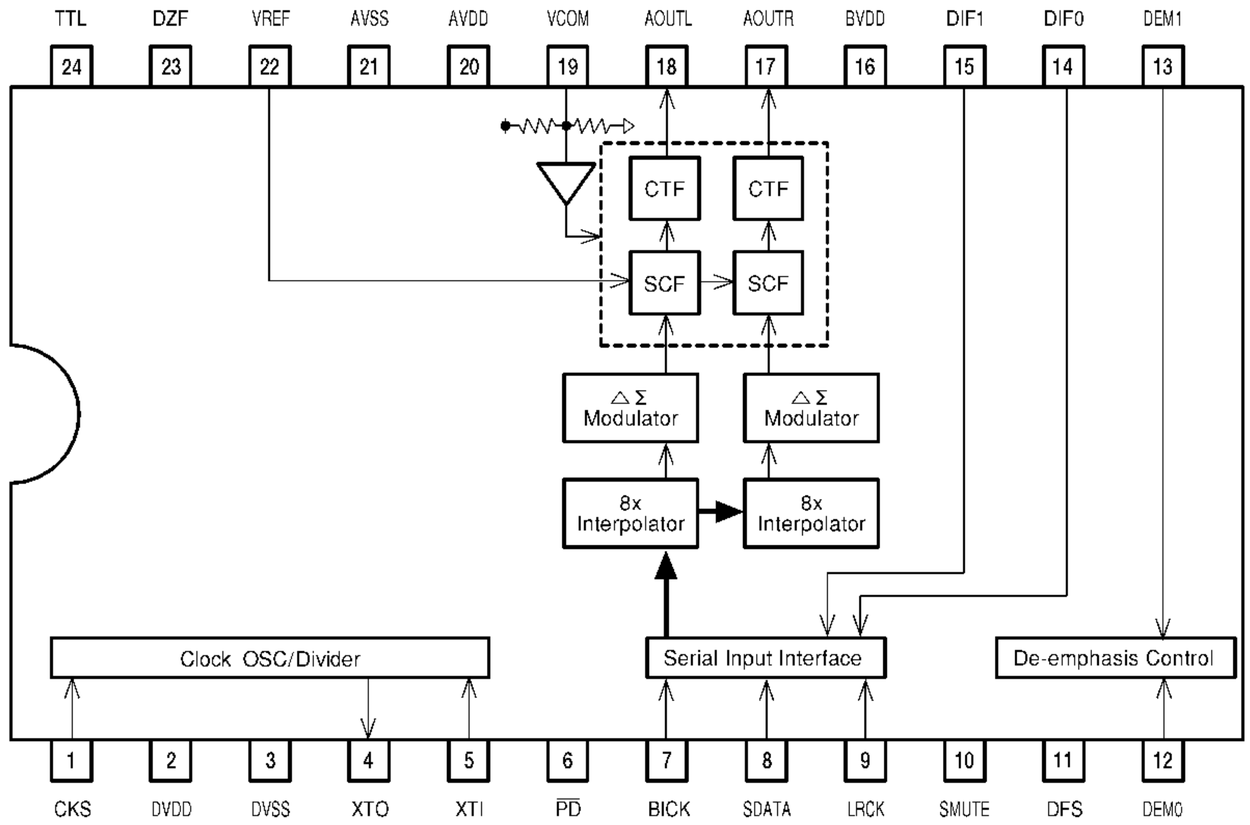
*PMW001B



*PD8027A



*PE2001AF



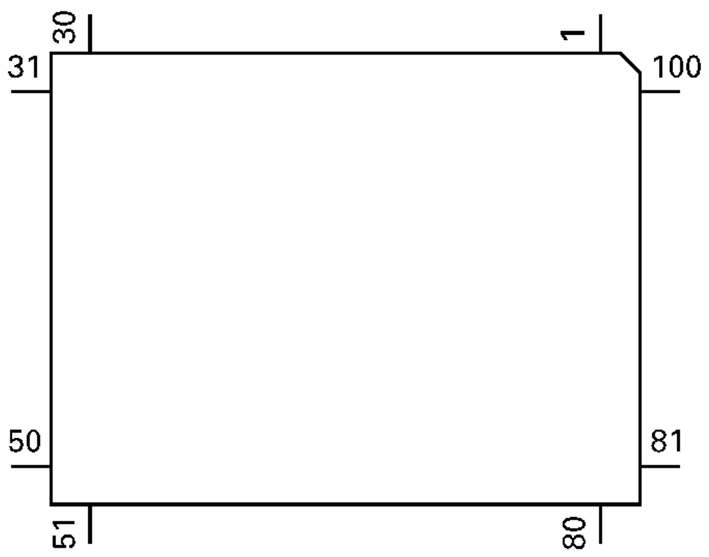
● Pin Functions (PD4771A)

Pin No.	Pin Name	I/O	Function and Operation
1	$\overline{\text{SWVDD}}$	O	Keyboard unit power supply control output
2	$\overline{\text{DSENS}}$	I	Grille detach sense input
3	$\overline{\text{CSENS}}$	I	Flap close sense input
4	$\overline{\text{ISENS}}$	I	Illumination power supply sense input
5	TESTIN	I	Test program mode input
6	$\overline{\text{DRST}}$	O	RDS reset output
7	ERROR	O	RDS disapprove of error correction output
8	$\overline{\text{SK}}$	I	RDS SK signal input
9	RECIVE	I	During RDS data reception output
10	$\overline{\text{L}}$/S	O	RDS fuzzy control output
11	$\overline{\text{RESET}}$	I	Reset input
12	XT2		Not used
13	XT1		Not used
14	VSS		GND
15	X2		Crystal oscillator connection pin
16	X1		Crystal oscillator connection pin
17	REGC		Connect to VDD
18	REGOFF		Connect to VDD
19	VDD		Power supply
20	ILMPW	O	Illumination power supply control output
21	SYSPWR	O	System power control
22	$\overline{\text{ADPW}}$	O	A/D converter power
23	LCDPW	O	LCD back light power supply control output
24	IPPW	O	Power supply control output for IP BUS interface IC
25	ASENBO	O	Slave power supply control output
26	AM	O	AM power output
27	TELIN	I	Telephone mute input

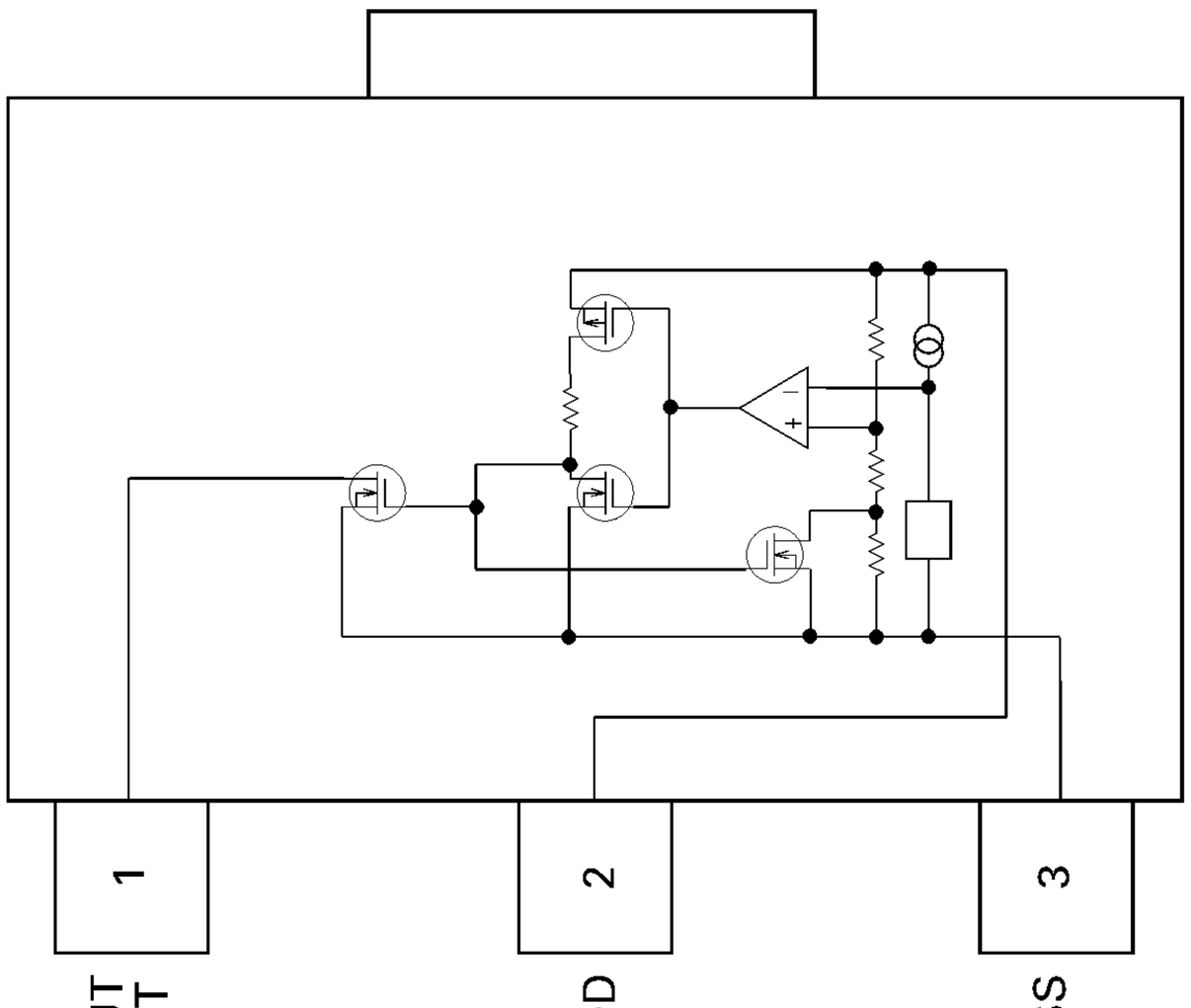
Pin No.	Pin Name	I/O	Function and Operation
28	MUTE	O	Mute output
29	DIM	O	Dimmer select output
30	SPMPX0	O	MPX output for spectrum analyzer
31	SPMPX1	O	MPX output for spectrum analyzer
32	SPMPX2	O	MPX output for spectrum analyzer
33	VCK	O	Clock output for electronic volume
34	VST	O	Strobe pulse output for electronic volume
35	VDT	O	Data output for electronic volume
36	$\overline{\text{TMUTE}}$	O	Tuner mute output
37	SEL1	I	Destination sense input
38	SD	I	SD input
39	$\overline{\text{ST}}$	I	FM stereo input
40	VSS		GND
41	VDD		Power supply
42	$\overline{\text{MDSENCE}}$	I	Modulation detect input
43	$\overline{\text{MUTCNT}}$	I	NF mute control input
44	$\overline{\text{RDSLK}}$	I	RDS LK signal input
45	$\overline{\text{CURRQ}}$	O	Tuner voltage FIX output
46	RDT	I	RDS demodulation data input
47	DRELAY	O	External relay output
48	DRSENS	I	Door open/close sense input
49	DRSYS	O	Door system select output
50	$\overline{\text{DLED}}$	O	Alarm LED output
51	DLSENS	I	Door lock sense input
52	STCUT	O	Starter cut off output
53	$\overline{\text{MOSENS}}$	I	Motion/window damage sensor input
54	CD5VON	O	CD +5V power supply control output
55	CONT	O	CD Servo driver power supply control
56	VDCONT	O	CD VD control output
57	CDMUTE	O	CD mute output
58	CDEJET	O	CD load motor eject control output
59	CDLOAD	O	CD LOAD motor loading control output
60	LOCK	I	CD spindle lock detector input
61	FOK	I	CD focus OK signal input
62	PCL	O	Clock adjustment output
63	MIRR	O	CD MIRR detection signal output terminal
64	$\overline{\text{CLAMP}}$	I	CD disc clamp sense input
65	$\overline{\text{XSCK}}$	O	CD LSI clock output
66	XSI	I	CD LSI data input
67	XSO	O	CD LSI data output
68	XA0	O	CD Control signal distinguishing data output
69	$\overline{\text{XRST}}$	O	CD LSI reset output
70	$\overline{\text{XSTB}}$	O	CD LSI strobe output
71	$\overline{\text{VSRS}}$	O	SRS output
72	VHIOUT	O	High output select output
73	TEST	I	Test terminal
74	SL	I	Signal level input from tuner
75	LEVEL	I	Level input for spectrum analyzer
76	CL	I	Detuning sense input
77	NL	I	RDS noise level input
78	EJTSNS	I	Disc EJECT position detect
79	DSCSNS	I	Disc detect
80	VDSENS	I	CD VD short detection input
81	TEMP	I	Temperature detect input
82,83	VDD		Positive power supply terminal for logic circuit
84	GND		GND
85	RX	I	IP BUS data input
86	TX	O	IP BUS data output

Pin No.	Pin Name	I/O	Function and Operation
87	GND		GND
88	$\overline{\text{LDET}}$	I	PLL lock sense input
89	RCK	I	RDS demodulation clock input
90	RDS57K	I	57kHz BP-OUT sense input
91	SEL0	I	Destination sense input
92	$\overline{\text{ASENS}}$	I	ACC power sense input
93	$\overline{\text{BSENS}}$	I	Back up power sense input
94	TUNPDI	I	PLL IC data input
95	KEYDT	I	Display data input
96	DPDT	O	Display data output
97	TUNPCK	O	PLL IC clock
98	TUNPDO	O	PLL IC data output
99	TUNPCE	O	PLL IC chip enable
100	PEE	O	Beep tone output

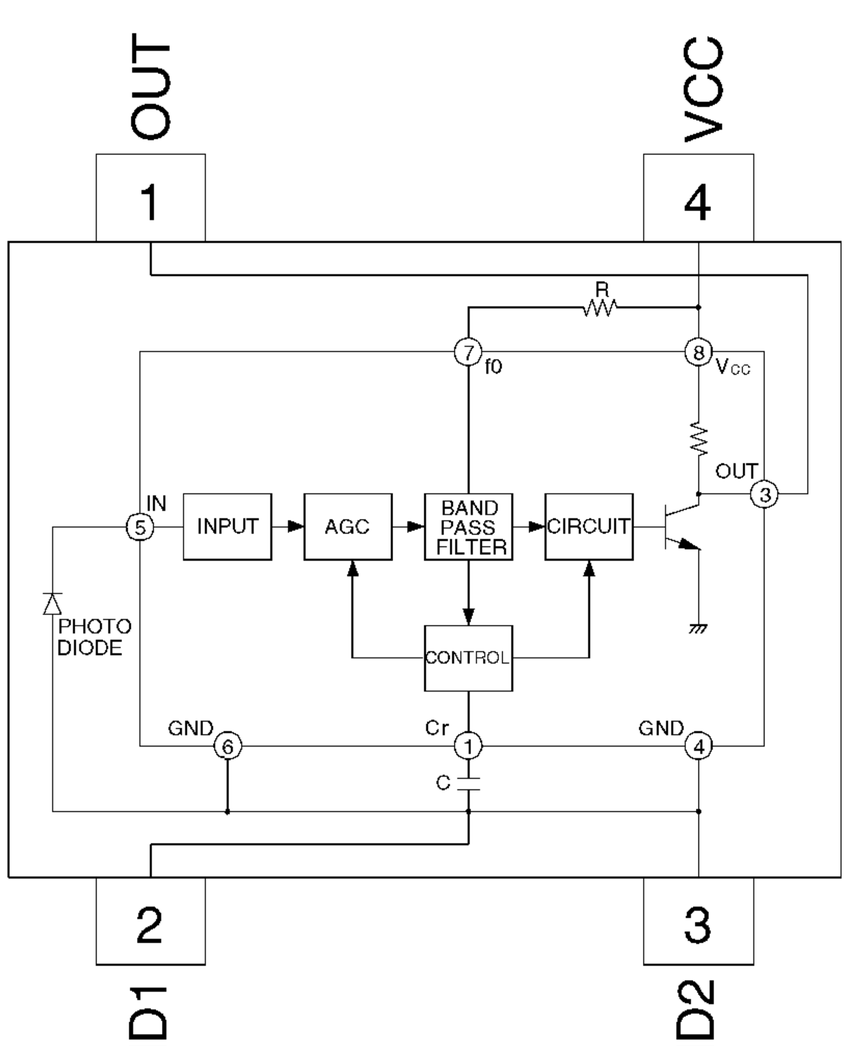
*PD4771A



S-80730ANDT



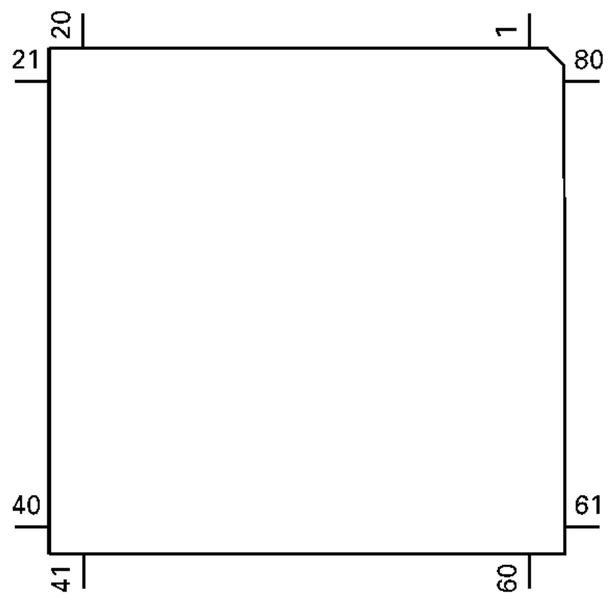
RS-140



● Pin Functions (PD6199A)

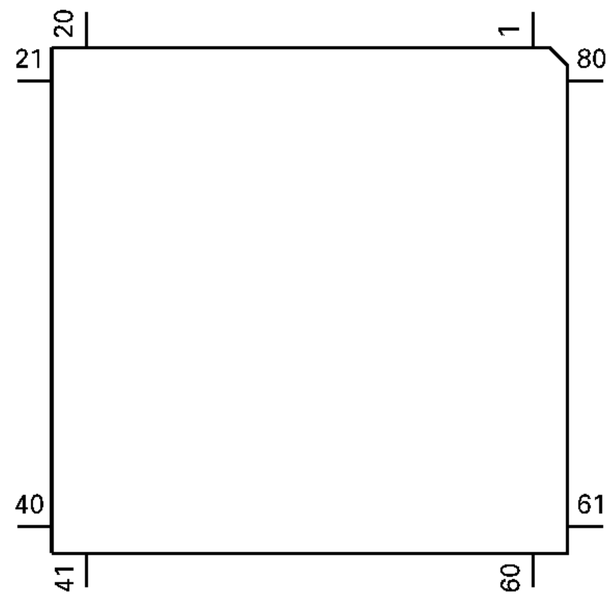
Pin No.	Pin Name	I/O	Format	Function and Operation
1	VSS			GND
2	XI	I		Crystal oscillator connection pin
3	XO	I		Crystal oscillator connection pin
4	$\overline{RST}$	I		System reset
5,6	MOD1,0	I		Model select input
7	LED	O	C	LED control output
8	SO	O	C	Key data output
9	SI	I		Serial data input
10	REM	I		Remote control reception
11	SDRQ	I		Reception error request input
12	ILM	O	C	Illumination color select output
13–16	KD4–KD1	I		Key sense input
17–22	KST6-1	O	N	Key strobe output
23	VCC			Power supply terminal
24–73	SEG49-0	O		LCD segment output
74–77	COM3–0	O		LCD common output
78–80	V3–V1			LCD Power supply terminal

*PD6199A



Format	Meaning
C	C MOS
N	N channel open drain

*PD6200A



● Pin Functions (PD6200A)

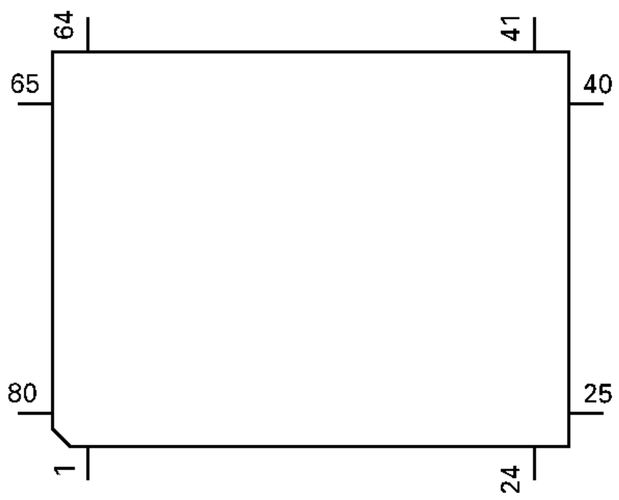
Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2	XI	I	Crystal oscillator connection pin
3	XO	I	Crystal oscillator connection pin
4	$\overline{RST}$	I	System reset
5,6	MOD1,0	I	Model select input
7,8	NC		Not used
9	SI	I	Serial data input
10	NC		Not used
11	RVER	O	Reception error output
12–22	NC		Not used
23	VCC		Power supply terminal
24–73	SEG49-0	O	LCD segment output
74–77	COM3–0	O	LCD common output
78–80	V3–V1		LCD Power supply terminal

● Pin Functions (UPD63702AGF)

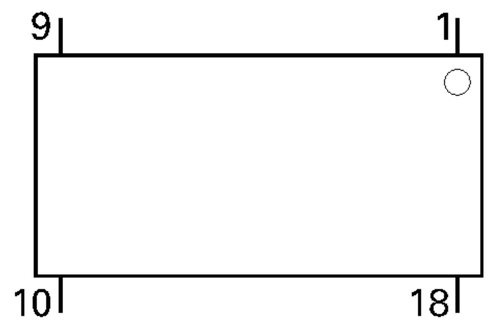
Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	$\overline{\text{RST}}$	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": $\overline{\text{STB}}$ active and set to address register AO="H": $\overline{\text{STB}}$ active and set to parameter
4	$\overline{\text{STB}}$	I	Signal to latch serial data within the LSI
5	$\overline{\text{SCK}}$	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	$\overline{\text{XTAL}}$	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	$\overline{\text{VCO}}$	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2, TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1, C1D2	O	Output pin for indicating the C1 error correction results
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times
58	SBSO	O	Output pin for the subcode data

Pin No.	Pin Name	I/O	Function and Operation
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74	VR2	I	Home position detector input
75	VR1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit

*UPD63702AGF



*PD0236AM



● Pin Functions (PD0236AM)

Pin No.	Pin Name	I/O	Function and Operation
1	BCSEL	I	Bit clock fs select
2	DASEL	I	Bit expand select
3	NC		Not used
4	LRSEL		LRCKO polarity select
5	LRCKO	O	LRCKO output
6	NC		Not used
7	BCKO	O	Bit clock output
8	DATAO	O	Data output
9	GND		GND
10	VDD		Power supply terminal
11	LRCKI	I	LRCKO input
12,13	NC		Not used
14	DATAI	I	Data input
15	BCKI	I	Bit clock input
16	NC		Not used
17	SEL	I	Bit expand / input data output select
18	XRST	I	Reset input

7.1.2 DISPLAY

● CAW1403(DEH-P835R/EW)

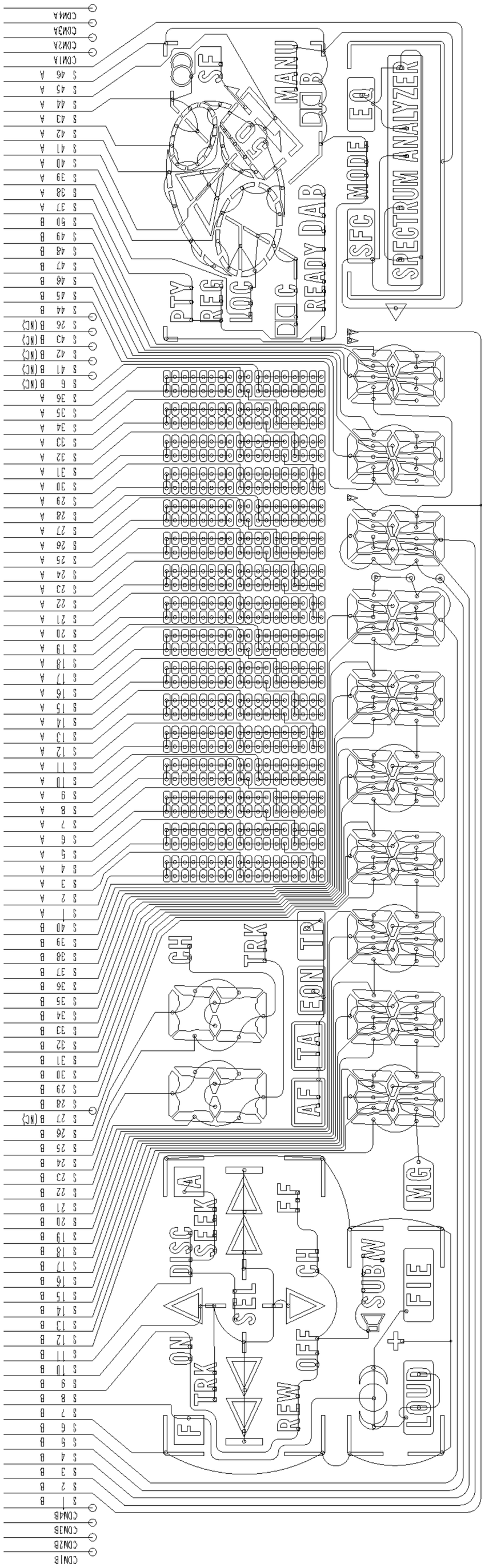


Fig. 28

7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● Removing the Case(Not shown)

1. Remove the two screws.
2. Insert and turn a flat screwdriver to remove the case.

● Removing the Detach Grille Assy(Fig.29)

1. Press the open button, and then pull Detach Grille Assy.

● Removing the Panel Assy(Fig.29)

1. Remove the two screws A.
2. Disconnect the two connectors.
3. Disconnect the two stoppers indicated by arrows, and then remove the Panel Assy.

● Removing the CD Mechanism Module(Fig.29)

1. Remove the four screws B.
2. Disconnect the connector.
3. Remove the CD Mechanism Module.

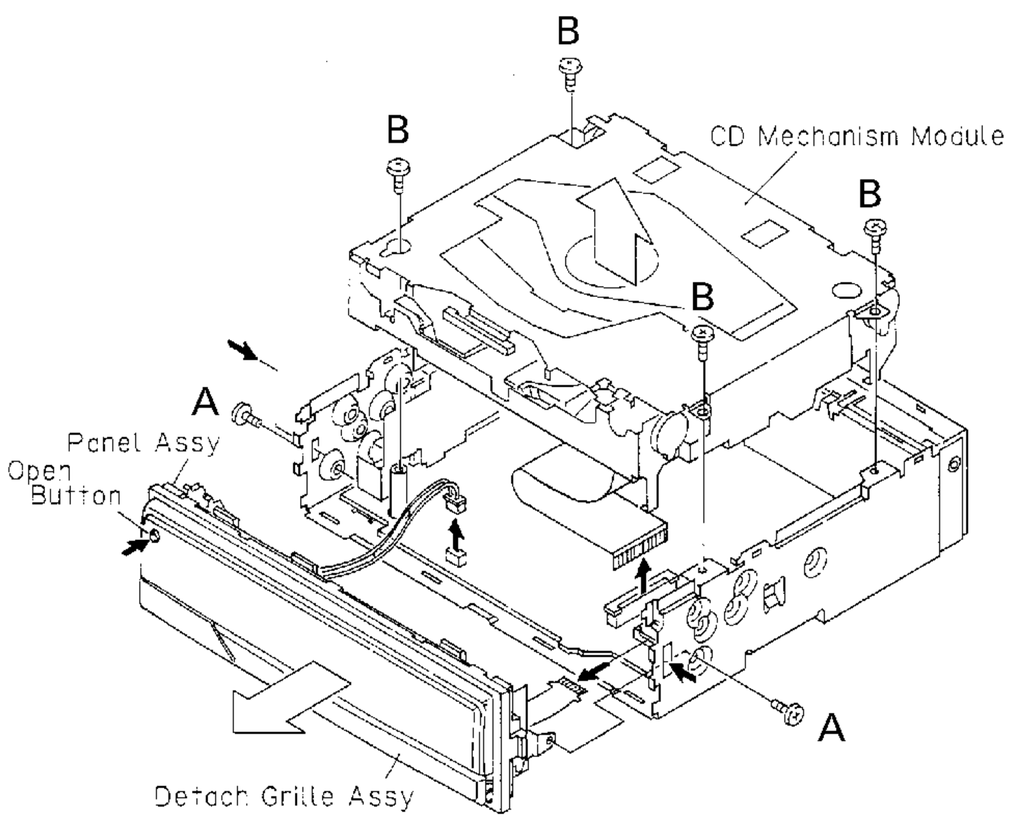


Fig. 29

● Removing the Chassis Unit(Fig.30)

1. Remove the two screws C, two screws D, screw E, and screw F.
2. Stretch the four claws, and then remove the Chassis Unit.

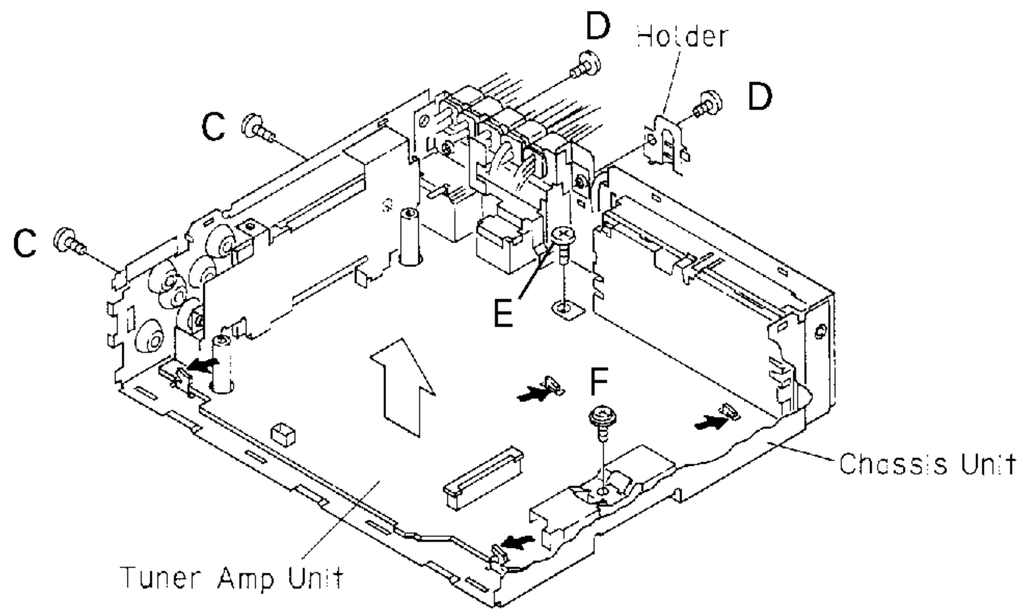


Fig. 30

7.2.2 TEST MODE

● CD Test Mode

1)Precautions

· This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.
If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.
Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.
Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.
If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

· Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

· Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.

· Since the protective systems in the unit's software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

· Test mode starting procedure
Switch ACC, back-up ON while pressing the **4** and **6** keys together.

· Test mode cancellation
Switch ACC, back-up OFF.

· Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.
*During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
*The unit will not load a disc.
When the unit malfunctions this way, either re-position the light source, move the unit or cover the photo transistor.

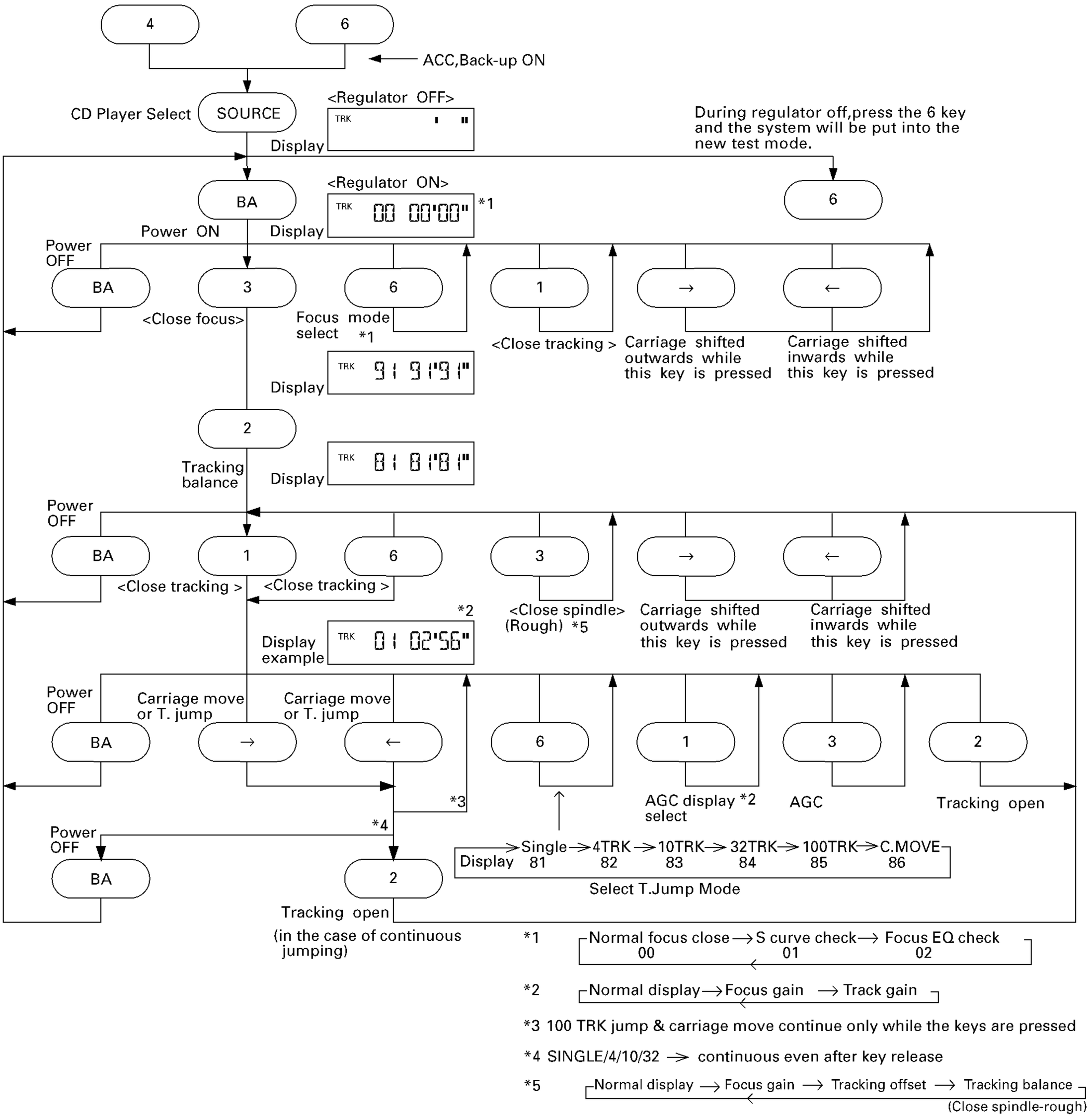
· When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.

· Turn power off when pressing the button → or the button ← key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

· SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released.Tracking is closed the moment C-MOVE is released.

· JUMP MODE resets to SINGLE as soon as power is switched OFF.

● Flow Chart



*1 Normal focus close (00) → S curve check (01) → Focus EQ check (02)

*2 Normal display → Focus gain → Track gain

*3 100 TRK jump & carriage move continue only while the keys are pressed

*4 SINGLE/4/10/32 → continuous even after key release

*5 Normal display → Focus gain → Tracking offset → Tracking balance (Close spindle-rough)

● Error Number Indication

If the CD should fail to operate or if an error has taken place during operation the player will enter into the error mode, and the cause of the error will be numerically indicated.
This is aimed at assisting in analysis or repair.

(1) Basic Means of Display

・With ERROR indicated in "MODE" on IP-BUS Display data, an error code is transmitted by the use of MIN and SEC. The MIN and SEC data will be identical.

・Examples of Display ERROR-XX

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
19	ELECTRIC	Set up failure	Tracking error waveform is too unbalanced (>50%) or level is too small →The P.U.unit or tracking error circuitry is N.G.
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal

"defects" means scratches, dirt etc an the surface of the disc.

● New Test Mode(aging operation and setup analysis)

The single CD player plays in normal mode. After being set up, it will display FOK (focus), LOCK (spindle), subcode, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, if any, (and disc number).
During the setup, the CD software operation status (internal RAM and C-point)is displayed.

(1) How to enter NEW TEST Mode

See the test mode flow chart Page 69.

(2) Relations of keys between TEST and NEW TEST Modes

Keys	Test Mode		New Test Mode	
	Regulator OFF	Regulator ON	PLAY in progress	Error Occurred, Protection Activated
BA	Regulator ON	Regulator OFF	—	Time of occurrence / cause of error select
→	—	FWD-KICK	TRACK+ / FF	—
←	—	REV-KICK	TRACK- / REV	—
1	—	TRACKING CLOSE	SCAN	—
2	—	TRACKING OPEN	REPEAT	—
3	—	FOCUS CLOSE	RANDOM	—
6	To New Test Mode Select	FOCUS MODE	AUTO/MANU	—

Operations, such as EJECT, CD ON/OFF, etc. are performed normally.

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause	Detail
40	ELECTRIC	PLAY	FOK=L 100ms	Put out of focus	Scratch, Stain, Vibration, Servo defect, etc...
41	ELECTRIC	PLAY	LOCK=L 100ms	Spindle unlock	
42	ELECTRIC	PLAY	Subcode unacceptable 500ms	Failed to read subcode	
43	ELECTRIC	PLAY	Sound skipped	Last address memory operated	

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving inwards	10-second time out, Home switch failed
03	Carriage moving outwards	10-second time out, Home switch failed
05	Carriage moving outwards	None
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closure (XSI=L)	Failure to close focus
10,14	Waiting for focus closure (FOK=H)	Failure to close focus
15, 16, 17	Focus closed, Tracking open	Focus disrupted
18	During focus AGC Subcode waiting	Focus disrupted
19	During tracking AGC	Disrupted focus
20	Waiting for MIRR, LOCK or subcode read Carriage closed, SPINDLE=ADAPTIVE	Focus disrupted, MIRR NG, Failure to lock, Failed to read subcode

(5) Example of Display.

·SET UP in progress

TNo.	Min	Sec
91	91	91

·Operation (PLAY, SEARCH, etc.) in progress perfectly identical with that in the normal mode.

·Protection/Error upon occurrence

(a) Error number indicated

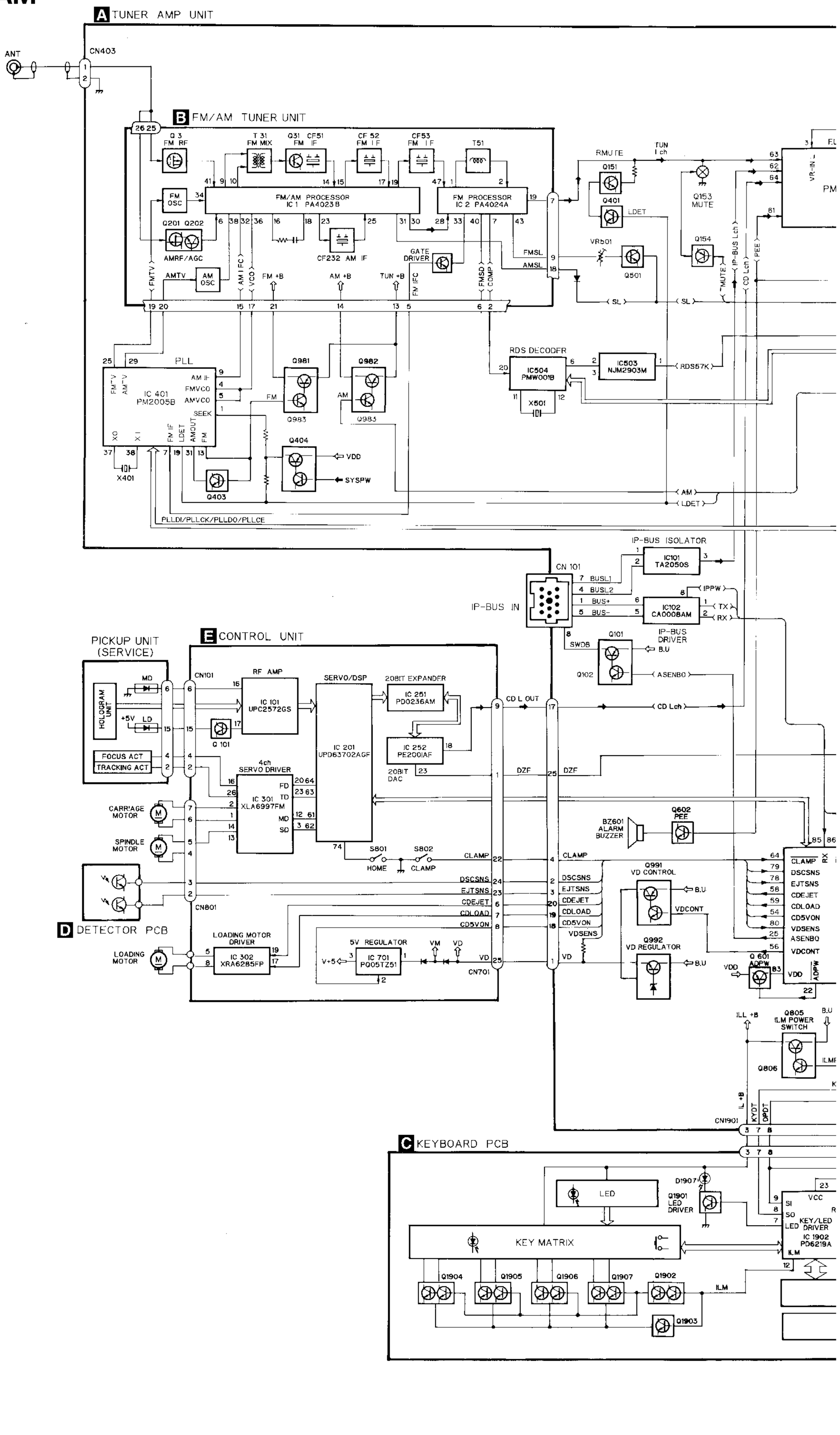
ERROR–xx

Select the display with the BAND key.

(b) Track number and absolute time indicated

TNo.	Min	Sec
10	40	05

7.3 BLOCK DIAGRAM



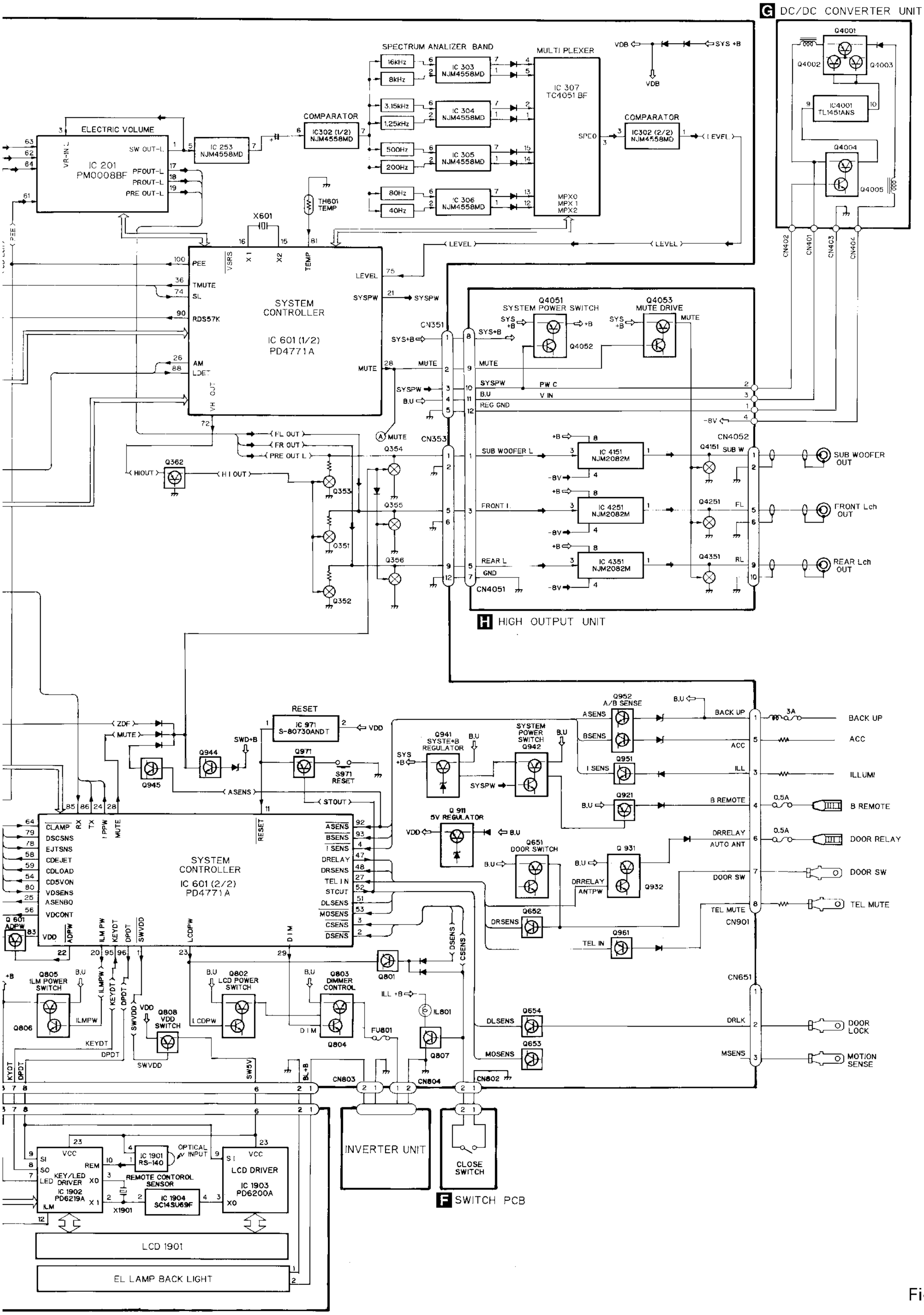
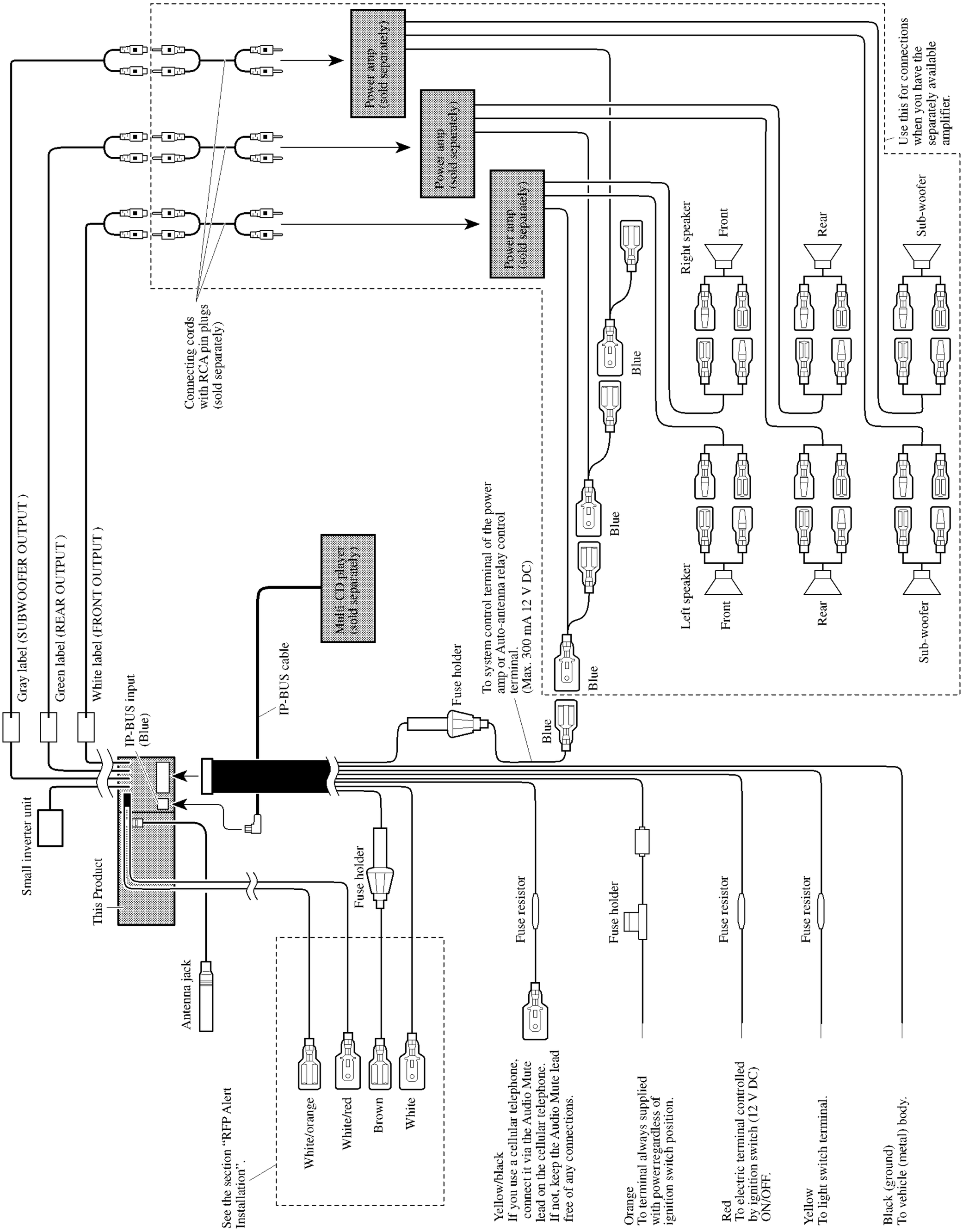


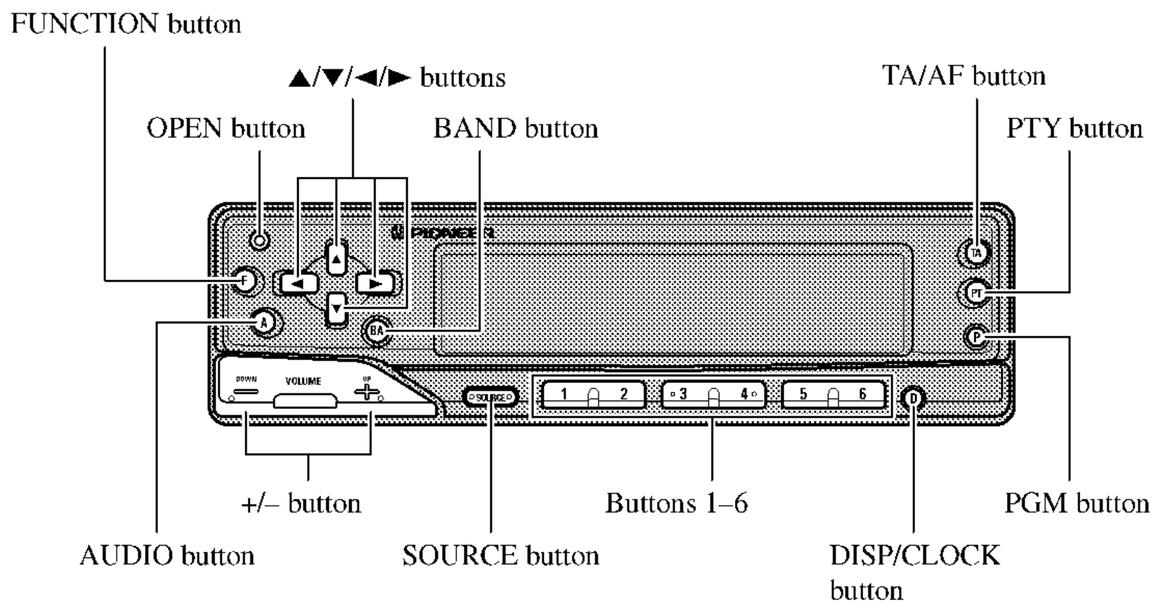
Fig. 29

8. OPERATIONS AND SPECIFICATIONS

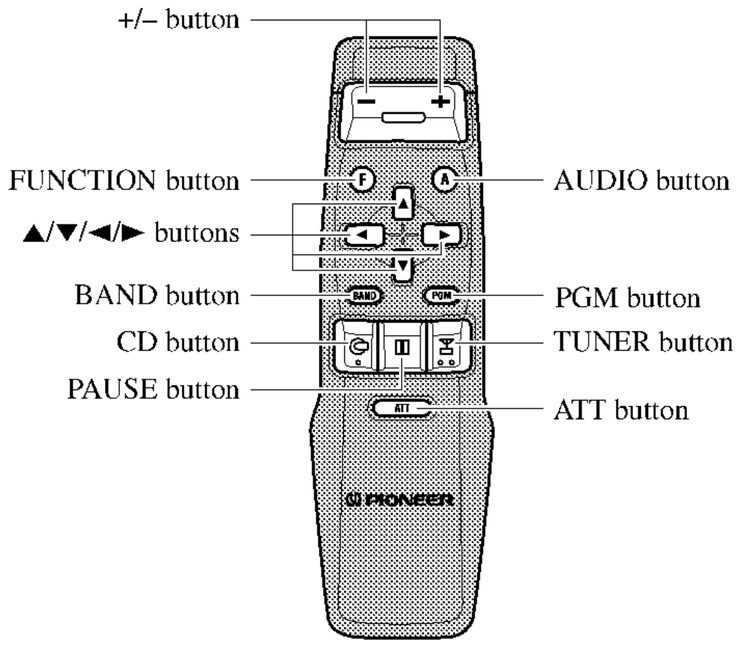


Key Finder

■ Head Unit



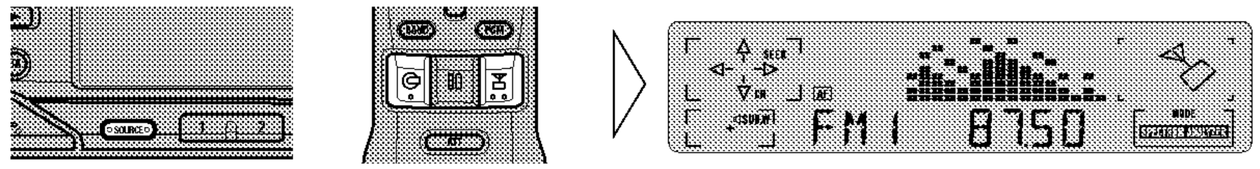
■ Remote Controller



Basic Operation

Switching Power ON/OFF

- **Select the desired source (such as the tuner).**



■ Head Unit

Each press of the SOURCE button selects the desired source in the following order:
Built-in CD Player → Tuner → Multi-CD player → AUX

To switch the sources OFF, hold down the SOURCE button for 1 second or more.

■ Remote Controller

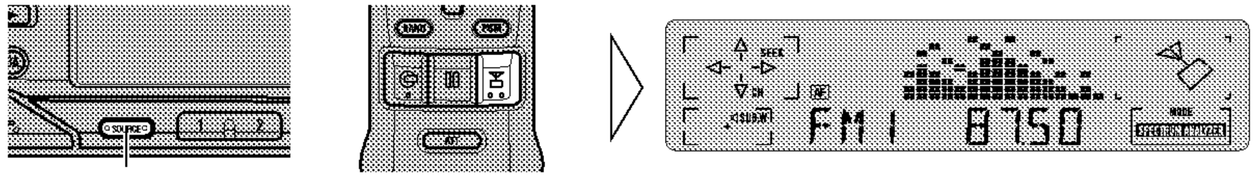
Each press of the button selects the desired source in the following order:
TUNER button : Tuner → OFF
CD button : Built-in CD Player → Multi-CD player → OFF

Note:

- In the following cases, the sound source will not change:
  * No Multi-CD player is connected to this product.
  * No disc is set in this product.
  * No magazine is set in the Multi-CD player.
  * AUX (external input) is set to OFF.

Basic Operation of Tuner

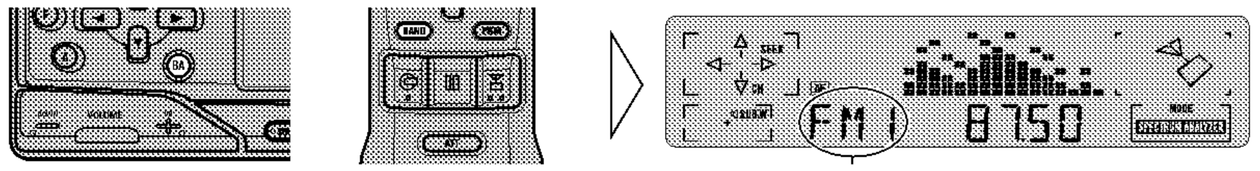
1. Select Tuner.



Each press
changes the Source ...

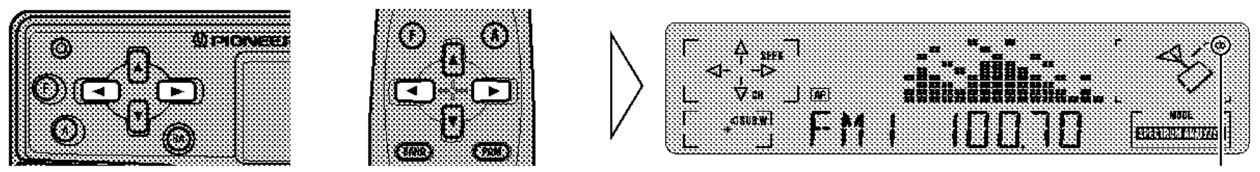
The program service name or frequency appears on the display.

2. Select the desired band.



FM1 → FM2 → FM3 → MW/LW

3. Tune the receiver to a higher or lower frequency.



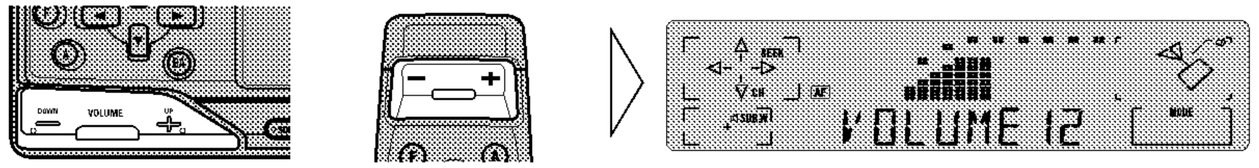
"◯D"

This product's tuner lets you select the tuning by changing the length of the time you press the button.

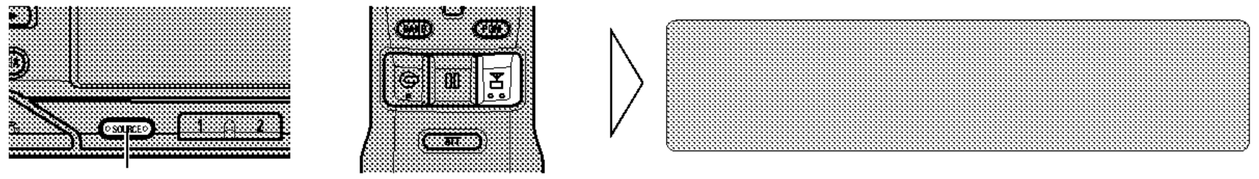
Manual Tuning (step by step)	0.3 seconds or less
Seek Tuning (automatically)	0.3 – 2 seconds
Manual Tuning (continuously)	2 seconds or more

Note:
- "◯D" indicator lights when a stereo station is selected.
- To select a weak broadcasting station that cannot be tuned in with the Seek Tuning function, tune in with Manual Tuning.

4. Raise or lower the volume.



5. Turn the source OFF.

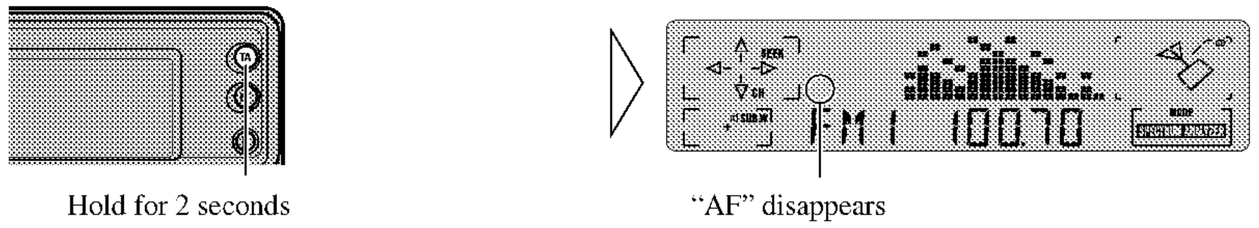


Hold for 1 second

AF Function Switching

This product's AF function can be switched ON and OFF. AF should be switched OFF for normal tuning operations.

- **Switch AF OFF.**



Hold for 2 seconds

"AF" disappears

To switch AF ON, repeat the preceding operation.

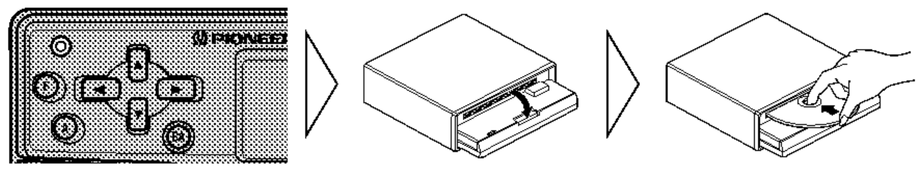
Note:
- You can also switch the AF Function ON/OFF in the Function Menu.

Using the Built-in CD Player

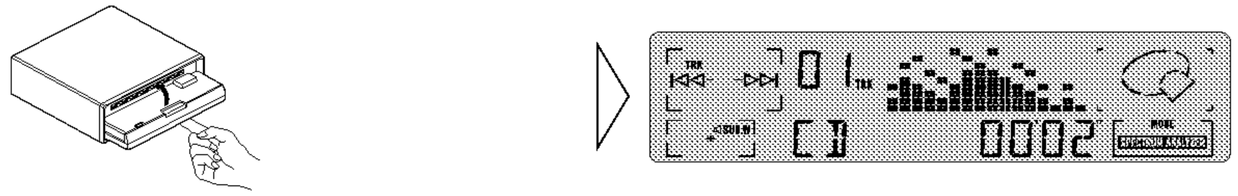
Basic Operation of Built-in CD Player

The built-in CD player plays one standard 12 cm or 8 cm (single) CD at a time. Do not use an adapter when playing 8 cm CD.

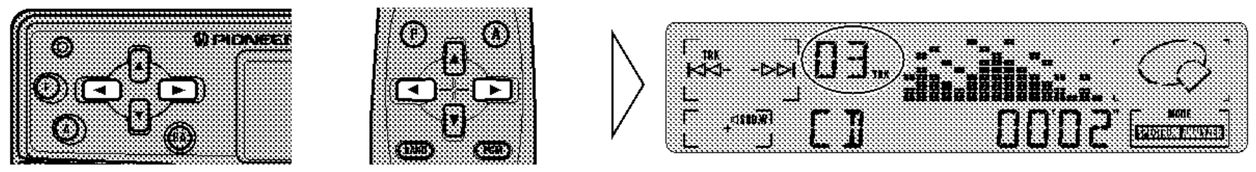
1. **Open the front panel and insert the disc with the recorded (iridesecent) surface down.**



2. **Close the front panel by swinging it gently upward.**



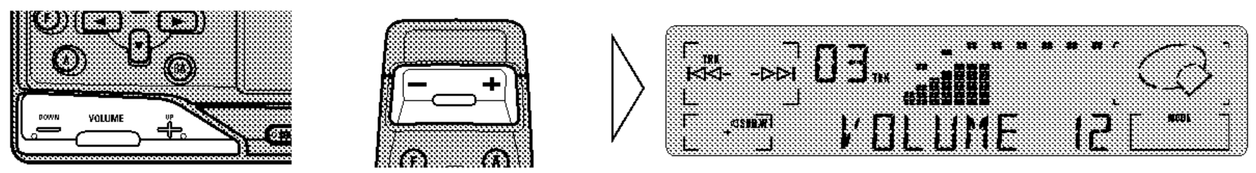
3. **Select the desired track (or fast-foward/reverse, per the chart below).**



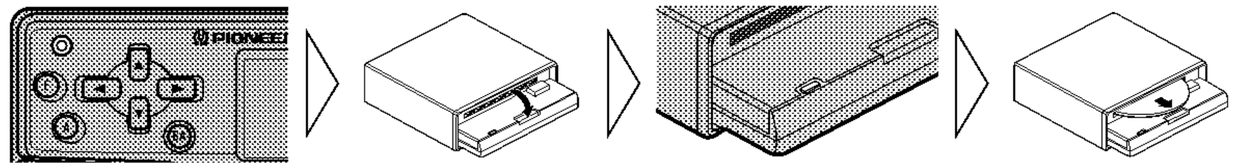
This product's built-in CD player lets you select the Track Search function or Fast-forward/Reverse function by changing the length of the time you press the button.

Track Search	0.5 seconds or less
Fast-forward/Reverse	Continue pressing

4. **Raise or lower the volume.**



5. **Open the front panel and remove the disc.**

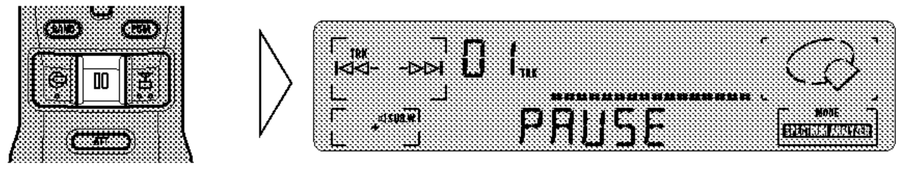


Be sure to close the front panel after removing the disc.

Note:
- The CD function can be turned ON/OFF with the disc remaining in this product. (See page 9.)
- Discs left partially inserted after ejection may incur damage or fall out.
- If a disc cannot be inserted fully or playback fails, make sure the recorded side is down, push the EJECT button and check the disc for damage before reinserting it.
- If a CD is inserted with the recorded side up, it will be ejected automatically after a few moments.
- If the built-in CD player cannot operate properly, an error message (such as "ERROR-14") appears on the display.

Pause

- **Stop playback temporarily or restarts the system.**



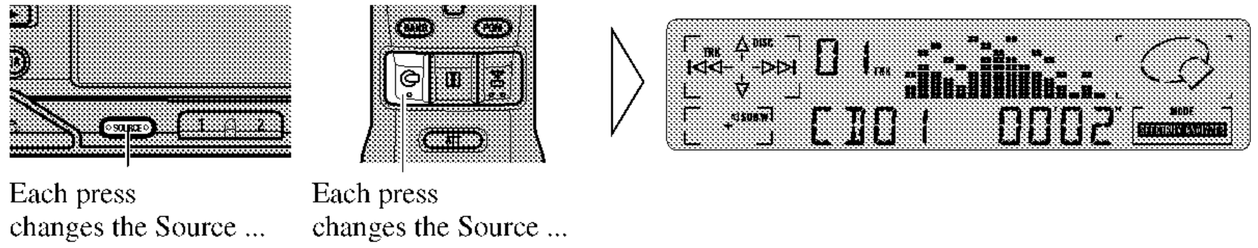
Note:
- You can also switch the Pause function ON/OFF in the Function Menu.

Using Multi-CD Players

This product can control one or more multi-CD players.

Basic Operation of Multi-CD Players

1. Select the multi-CD player source.

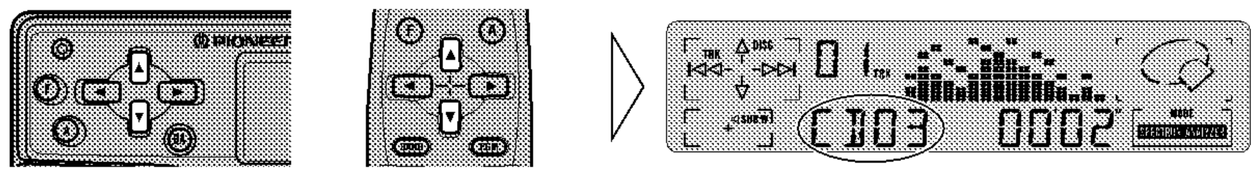


Each press changes the Source ...

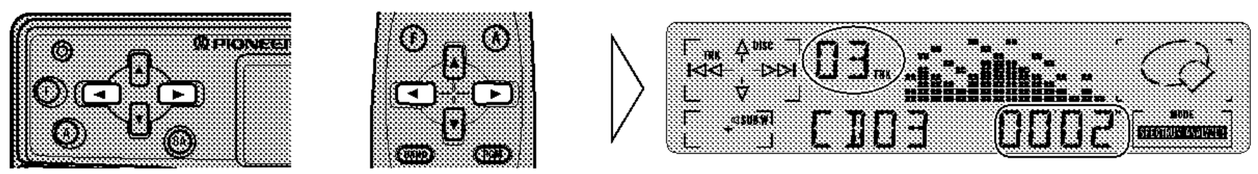
Each press changes the Source ...

Note:
- The multi-CD player may perform a preparatory operation, such as verifying the presence of a disc or reading disc information, when the power is turned ON or a new disc is selected for playback. "READY" is displayed.
- If the multi-CD player cannot operate properly, an error message such as "ERROR-14" is displayed. Refer to the multi-CD player owner's manual.
- If there are no discs in the multi-CD player magazine, "NO DISC" is displayed.

2. Select the desired disc.



3. Select the desired track (or fast-forward/reverse, per the chart below).



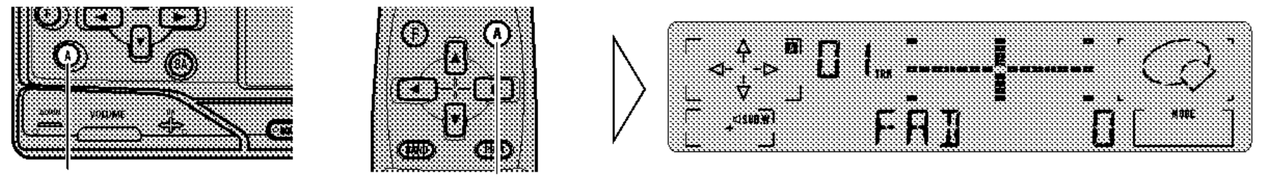
This product lets you select the track search function or fast-forward/reverse function by changing the length of the time you press the button.

Track search	0.5 seconds or less
Fast-forward/Reverse	Continue pressing

Audio Adjustment

Entering the Audio Menu

- **Select the mode you want to adjust in Audio Menu.**



Each press changes the Mode ...

Each press changes the Mode ...

Each press of the AUDIO button selects the mode in the following order:
FAD → BAS → MID → TRE → LOUD → SUB.W* → (80HZ 0)* → PEAKBOUND → SLA

* You cannot select the "SUB.W" and "80Hz 0" modes when a DSP (except the Hide-away DSP) is connected to this product.

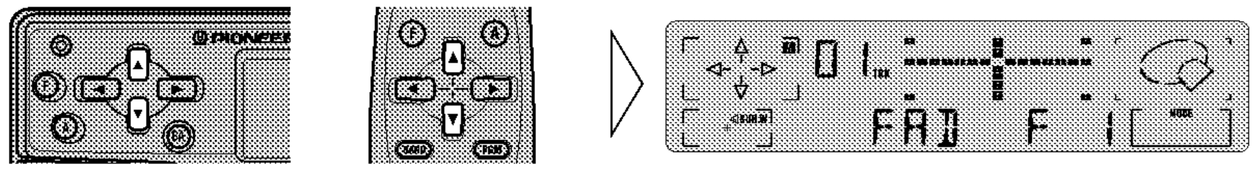
To cancel the Audio Menu, press the BAND button.

Note:
- You can select the "80HZ 0" mode only when sub-woofer output is switched ON in the SUB.W mode.
- After entering the Audio Menu, if you do not perform an operation which 30 seconds, the Audio Menu is automatically canceled.

Balance Adjustment

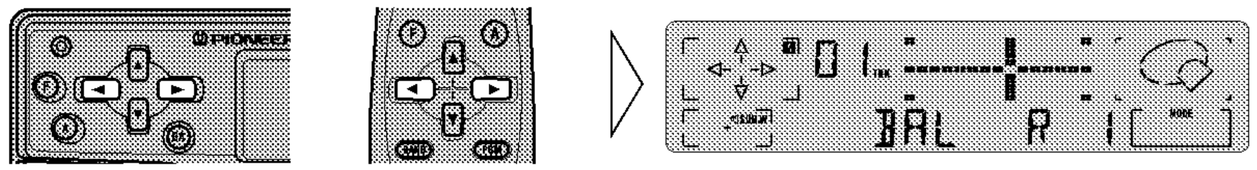
This function allows you to select a Fader/Balance setting that provides ideal listening conditions in all occupied seats.

1. **Select the Fader/Balance mode (FAD) in the Audio Menu.**
2. **Shift the balance progressively to the front or rear speakers.**



"FAD F15" – "FAD R15" is displayed as it moves from front to rear.

3. **Shift the balance to the left or right speaker, respectively.**



"BAL L9" – "BAL R9" is displayed as it moves from left to right.

To cancel the Audio Menu, press the BAND button.

Note:

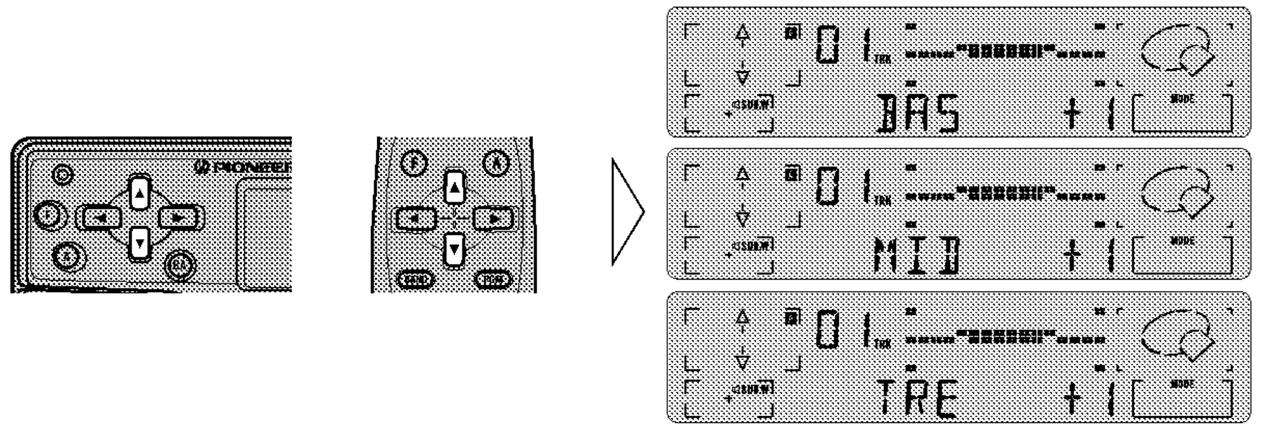
- "FAD 0" is the proper setting when 2 speakers are in use.
- You cannot shift the balance progressively to the front or rear speakers when a DSP (except the Hide-away DSP) is connected to this product.

Audio Adjustment

Bass/Middle/Treble Adjustment

This product is equipped with three tone adjustment modes, the Bass (BAS), Middle (MID) and Treble (TRE) modes. It is possible to select a different tone adjustment setting for each source.The built-in CD player and multi-CD player are set to the same tone adjustment setting automatically.

1. **Select bass mode (BAS), middle mode (MID) or treble mode (TRE) in the Audio Menu.**
2. **Increase or decrease the intensity of the Bass, Middle or Treble, whichever is selected.**



The display shows "+6" – "–6".

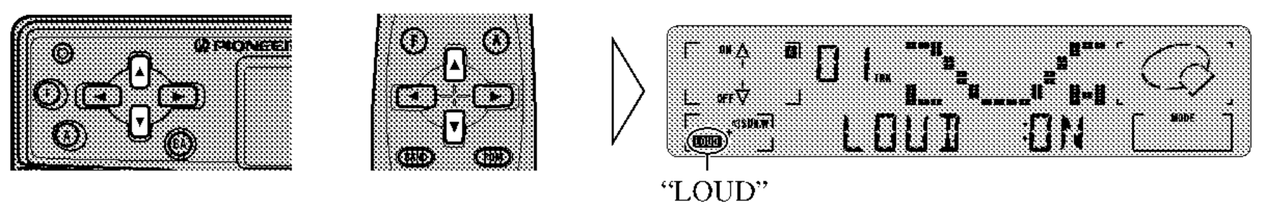
3. **Repeat steps 1–2 above for the other Bass, Middle or Treble Adjustment.**

To cancel the Audio Menu, press the BAND button.

Loudness Adjustment

The Loudness function compensates for deficiencies in the low and high sound ranges at low volume.

1. **Select the Loudness mode (LOUD) in the Audio Menu.**
2. **Switch the Loudness function ON or OFF.**



"LOUD"

To cancel the Audio Menu, press the BAND button.

Specifications

General

Power source .... 14.4 V DC (10.8 – 15.1 V allowable)
Grounding system .... Negative type
Max. current consumption .... 3 A
Dimensions
(mounting size) ...... 178 (W) × 50 (H) × 155 (D) mm
(front face) .... 188 (W) × 58 (H) × 18 (D) mm
Weight .... 1.4 kg

Amplifier

Max preout output level .... 4 V
Preout impedance .... Less than 100 Ω
Sub-woofer output
Crossover frequency ....50 Hz, 80 Hz, 125 Hz
Crossover slope ....–18 dB/oct
Tone controls
(Bass) .... ±12 dB (80 Hz)
(Middle) ....±12 dB (400 Hz)
(Treble) .... ±12 dB (10 kHz)
Loudness contour .... +10 dB (100 Hz), +7 dB (10 kHz)
(volume: –30 dB)

CD player

System .... Compact disc audio system
Usable discs .... Compact disc
Signal format .... Sampling frequency: 44.1 kHz
Number of quantization bits: 16; linear
Frequency characteristics .... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio .... 120 dB (1 kHz) (IEC-A network)
Dynamic range .... 98 dB (1 kHz)
Number of channels .... 2 (stereo)

FM tuner

Frequency range .... 87.5 – 108 MHz
Usable sensitivity
.... 11 dBf (1.0 µV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 16 dBf (1.7 µV/75 Ω, mono)
Signal-to-noise ratio .... 70 dB (IEC-A network)
Distortion .... 0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response .... 30 – 15,000 Hz (±3 dB)
Stereo separation .... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range .... 531 – 1,602 kHz
Usable sensitivity .... 18 µV (25 dB) (S/N: 20 dB)
Selectivity .... 50 dB (±9 kHz)

LW tuner

Frequency range .... 153 – 281 kHz
Usable sensitivity .... 30 µV (30 dB) (S/N: 20 dB)
Selectivity .... 50 dB (±9 kHz)

Note:
- Specifications and the design are subject to possible modification without notice due to improvements.